Gleanings in Bee Culture
"Created to help beekeepers succeed."

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Cotton as a Honey Plant

By J. Banks Cashion, Shelby, North Carolina

Cotton is seeded in this county (Cleveland, North Carolina) around the middle of April to the middle of May. I observed the first bloom in our fields last year on the 28th of June, but it was the 9th of July before sufficient blooms were present for bees to work, and on the 21st of July I thought enough nectar was coming in to warrant putting on the supers.

Humid Weather is Favorable for Cotton

It seems that cloudy, humid weather which we have during the latter part of July and August, is very favorable for the secretion of nectar. However, a rainy spell of a few days hinders the flow for the next ten days. I don't know but that a few days of rainy weather are a blessing as they prolong the flow. I have heard a lot of controversial arguments as to which soil, red or gray, affects the flow of nectar. As far as I can determine, it does not make much difference as bees work plants in both types of soil with about the same vigor. It does seem that more lime might be desirable.

The species of cotton grown here is the upland or short staple **(G. hirsutum).** This species has both floral and extra-floral nectaries. The five white petals overlap except at the base where there are five small openings leading down into the calyx. These openings are protected by long interlacing hairs which exclude all insects too small to be of use as pollinators. However, thrips are sometimes present in large numbers. I found bees working the blossoms after they had closed up at the top and turned red. The petals wither at the base and shrivel up to where the bee can easily get to the nectar by going down the outside of the flower and running the tongue between the base of the petal and the rim of the calyx. It seems that in hot, dry weather the blossoms turn red and close up early in the afternoon, then are worked for the rest of the day.

There are two sets of extra-floral nectaries, the involucral and the leaf nectaries. At the bottom of the flower there are three leaf-like brackets called the involucral. At the base of each of these brackets there is a nectary, both on the inner and outer side, making a total of six. It seems that bees which start working these nectaries in the morning, work them until they cease to yield, just as though they were a different flower. At least they don't go down into the flower on the same trip that they are working these nectaries. The same thing happens when they

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are working the leaf nectary. I have yet to see one change from floral to extra-floral nectary on the same trip to the field.

The leaf nectaries are located on the under side of the rib of the leaves, sometimes numbering up to five. Unfortunately, these nectaries do not yield all day. Under cloudy, humid conditions they might yield from daylight until about 9:30 a.m., but hardly a bee is seen on them after that time. These leaf nectaries are more of an asset than they have been given credit for, as they yield nectar before the floral and involucral nectaries start for the day, making the honey flow from daylight until almost dark.

When bees are working the blossoms from the inside they become dusted with pollen. This in unfortunate as I have yet to see pollen being gathered in the baskets to be taken home for use in rearing brood. If one will observe closely when the flow is not rushing it will be noticed that individual bees may be seen hanging around on the leaves brushing this pollen off their bodies, and little balls of pollen may be seen all over the fields being left there by bees rather than carry it home on their legs. When the flow is heavy you will see lots of bees going in at the entrances of the hives powdered with pollen, apparently not taking time to finish it off in the field. I believe that I will be safe in saying that a certain amount of pollen gets into the honey by this method, giving some of it a golden color, while some of it will be almost white. The act of the bees brushing the pollen off in the fields onto the leaves might be some factor in pollination that we do not yet understand. I have heard it stated that the cross-pollination furnished by the honey bees tends to increase the length of the staple.

Last year the flow started in earnest about the 21st of July and lasted until about September 4th. Cotton honey is very light in color and mild in flavor and compares favorably with the best honeys in the world. When the flow is heavy there is a delightful odor in the apiary, and a hum that is a symphony to the ears of any beekeeper who keeps bees for something more than honey, money, or beeswax. There is one objectionable characteristic of cotton honey and that is the fact that it crystallizes very soon after it is extracted. Comb honey will keep all winter if kept in a room at normal temperature and agitation kept to a minimum.

With 4000 acres of cotton within bee flight of my apiary, it would seem that a honey crop would be almost assured, but here is our problem: The spring honey flow comes about the 1st of May and lasts until about the 5th of June. Here we have a let-down in brood rearing and if nothing is done, the queens slow up in production and we come up to the cotton flow with weak colonies and therefore do not realize a surplus.

This past year by requeening ten colonies around the middle of April, except one which was superseded, gave gratifying results. I think now that to requeen around the 20th of May will be much better as it seemed that the colonies were in better shape when the first blossoms appeared than three weeks later when enough nectar was available to begin storing a surplus. It also seemed that Nosema was more prevalent during those three weeks just prior to the honey flow and no doubt it cut down on the amount of surplus. Another answer might be to secure queens from breeders who have queens that keep up their production right on through a dearth of nectar as long as there are any stores in the hive. There may be other answers that will beat anything yet tried here. Any suggestions from beekeepers who might have encountered the same problem with some measure of success will be appreciated.

Healing Power of Honey

In the New York Times I read that a Russian Doctor and Professor of Medicine treated with success stomach ulcers with honey. Half a pound of honey per day taken a few spoons at a time 3 or 4 times a day. I told that to an Irish lady who was visiting recently from Ireland and she said, "Honey and milk mixed together is the medicine used by Irish farmers since ages for the same trouble."—A. Toth, New Brunswick, New Jersey.

Economic Trends and Problems of Beekeeping

By Robert D. Patton

Professor of Economics, Ohio State University

[Dr. Patton is a sideline beekeeper who derives considerable pleasure and honey from his bees kept on his farm near Columbus, Ohio. This talk was delivered at Beekeeper's Short Course, Ohio State University, on March 23, 1949.—Ed.]

Beekeeping, like every other branch of agriculture today, finds its economic welfare wrapped up in conditions that extend far beyond beekeeping itself, or even the whole of agriculture, to national and even world-wide scope. These conditions are of great importance to every beekeeper who expects to derive an income from his bees—in the form of a fruit, vegetable, or seed crop if not directly in cash. Only the hobbyist who keeps bees for the fun of it can ignore economic trends.

The economic problems and trends which are important to beekeepers may be divided into those which affect all of agriculture as well as other types of production, on the one hand, and on the other the problems which are exclusive to beekeeping. In general terms the economic outlook is good. It is true that there has been some increase of unemployment in recent months, but it is also true that there have been more people employed than ever before. The national income has been continuing near the highest levels in our history. While some recession from high prices of the postwar years is bound to come because abundance is replacing scarcity, it is a mistake to expect a repetition of the severe depression conditions of the thirties.

Of course, it is the easiest thing in the world to be wrong, and I may be completely wrong in believing we are relatively safe from the danger of a serious setback. My boldness is due to the fact that the government has become very much more deeply involved in our economic system in the past 20 years than it ever was before. We have a tremendous national debt on which the Federal Government must pay interest through good times and bad. A sharp business setback would endanger the government's ability to pay that interest, therefore no government of any political party with a chance to win an election in this country could fail to use every resource available to prevent such a setback. Also, through social security, veterans' benefits, and military expenditures, the government is collecting through taxes and spending a much larger portion of the national income than in former years. Those expenditures go on year in and year out, and no government can permit business to get so bad as to threaten its ability to continue those necessary expenditures.

Besides these factors which affect all business, it is pretty clear by now that assistance to agriculture is going to continue to be a part of our government policy regardless of which political party is in power. There is an economic justification for such a policy since practically every branch of agriculture involves many thousands of small producers no one of whom alone can do anything to stabilize market conditions. In very few industries does a similar condition prevail. Beekeepers have not benefitted from any government farm program thus far. There is no reason why they should not do so, even if the idea is rather new. Other agricultural producers are certainly not going to hesitate to cooperate and benefit from such programs and beekeepers have as good a claim as anyone else.

When we turn our attention to the particular problems of beekeeping we find a worse state of affairs than for many years. How much the beekeeper has left at the end of the year is the result of how low he has been able to keep his expenses and how high he has been able to push his income. Since the war, expenses for labor and materials have soared in spite of the best efforts of the beekeeper to manage his operations with the greatest efficiency. On the other side of the scale, income has hit the skids since the end of sugar rationing. The price of wax has held up in respectable company, but the price of honey has been hunting for the cellar and even threatens to dig a hole through the floor. If what I have already said about the

general economic outlook has any truth in it at all, there is probably not very much hope for the beekeeper in the reduction of his labor and equipment costs in the forseeable future. If beekeeping is to be more than a hobby, or a sideline for orchardists, some vegetable growers and seed producers, something new has got to be added to the beekeeper's income. This requires the best thought of everyone in the business.

Income May Come From Two Sources

From one point of view, we may say that the cash income of the beekeeper must come from one or both of two sources: (1) from the sale of something carried into the hive by the bees, or (2) some valuable service performed by the bees when they are outside the hive. Up to the present time, honey has been by far the principal source of income, with wax in second place. There is now the suggestion for the future that pollen may come to have value as a dietary supplement in human nutrition. So far, however, pollen is of value only for feeding back to the bees. Since wax takes care of itself pretty well, honey is the problem child among the products which the bees provide for their keepers. Can anything be done to bolster up the price of honey?

It would be nice if I could give a good answer to that question but I am afraid I cannot. Well planned efforts by the American Honey Institute and individual beekeepers to expand the market for honey are certainly in order and should achieve considerable success. I have a lurking fear, however, that the trend in the American diet away from cereals toward a meat, dairy product, and green vegetable diet will prevent honey from again attaining the relatively favorable position which it enjoyed a generation or more ago. Sales promotion will surely better the honey market conditions of the past year or two, but I for one doubt if that is the complete answer to the beekeeper's economic problem.

If vigorous honey marketing does not get the beekeeper out of the red, is government honey price support called for? I have already said that the beekeeper is as much entitled to government assistance as any other agricultural producer. Honey price support through purchases for the school lunch program or for other purposes is all right to relieve an emergency situation, but again I do not think it provides the full answer for the long run. We must remember that any government price support program has got to be accompanied by production restriction if it is going to hold up. The beekeeper does not want to be forced to cut down the number of colonies of bees which he keeps, and such reduction would cause serious harm to the nation's agriculture through the further reduction of already inadequate pollination services.

Income From Pollination Services

This brings us to the last topic I am going to discuss—and to the real heart of the beekeeper's economic problem as I see it—that is: How can the beekeeper derive at least a part of the income produced by his bees through their pollination services? The real value of these services is being recognized more and more, and the beekeeper must spread that knowledge ever more widely. In some sections, beekeepers have already begun to get substantial amounts of income from the rental of their bees or from various kinds of arrangements to share an increase in legume seed yield from the aid of bees. That is fine and we need a great deal more education and experimenting along such lines. In specialized agricultural areas such as the fruit growing and legume seed producing areas, I would expect that rental or crop sharing agreements would provide a solid basis for commercial beekeeping. In general farming areas, though, I fear that the pollinating benefits of bees are not sufficiently concentrated on one single crop to enable the beekeeper to derive some cash income from them. Yet, in promoting the reseeding of legumes on permanent pastures, for example, bees are indispensable. They also serve to increase yields on the farm orchard, berry patch, and garden. Can the beekeeper expect the general farmer to pay him for these services? Probably not, at least not enough to make beekeeping pay.

Is there a way out of the beekeepers' dilemma in general farming areas comprising most of the United States and Canada? All of the factors I have mentioned will help, but

where they are not enough to make commercial beekeeping pay and where the bee population falls below an adequate level to maintain general pollination services, I think there is an unbeatable case for government aid. For the long run, I should much prefer to see beekeepers work for government assistance due to pollination rather than as price support for honey. If we are going to achieve the conservation for our agricultural lands through a system of conservation incentive payments, as seems to be our settled policy at the present time, then the keeping of bees to increase legume seed yields is as much a conservation practice as tiling land so that legumes will thrive.

Incentive Payment to Beekeepers May be Necessary

Where the pollinating service of bees is general rather than related to one particular crop, then it seems to me that public support of beekeeping through incentive payments from funds derived from taxation is not different in principle from public road building. A general agricultural area needs an adequate bee population to maintain its soil and its economic prosperity just the same as it needs good roads. If all other sources of income to the beekeeper prove to be insufficient, and if it appears that the only way beekeepers can derive a proper income from the pollination services of their bees is through government incentive payments designed to maintain an adequate bee population, then it seems to me that beekeepers should urge the adoption of such a policy.

I realize fully that many beekeepers will disagree with my analysis of the economic problems of the industry. I realize also that as a backlot beekeeper there are many problems that I do not encounter directly, and do not know much about. I do not mean to propose a government handout as a solution to the problems of beekeepers. I do not believe I am mistaken in thinking that commercial beekeeping is at a crossroad in its history. There is no reason why conditions will be better tomorrow automatically. If the points I have raised stimulate the thinking of those who have the economic welfare of beekeeping at heart, I shall be amply rewarded.

A Resolution by the American Seed Trade Association

On April 21, 1949, Jas. I. Hambleton, Chief of the Division of Bee Culture, and Roy A. Grout, president of the American Beekeeping Federation, appeared before the Crop Improvement Committee of the American Seed Trade Association to explain the plight of the beekeeping industry and its possible effects upon the production of legume and vegetable seed crops. The 35 members present were very much interested, asking numerous questions, and took unanimous action which resulted in the passing of the following resolution by the Executive Committee the following day:

Importance of Bees for Pollination Service.

"Whereas the production of legume and many vegetable seeds are dependent, to a large extent, upon pollination by honey bees, it is our belief that the keeping of bees should be maintained at the highest possible level in agricultural areas. Owing to the fact that beekeeping is not well organized as an industry, and that many branches of agriculture benefit from pollination services of these insects, that the Department of Agriculture be urged to take appropriate steps to support an adequate educational program that will maintain an essential bee population for pollination.

"Means should also be developed whereby beekeepers can be paid for pollination services by such organizations as are benefitted, because it is apparent that the income from honey is not sufficient to maintain an adequate bee population."

Copies of this Resolution have been sent to the Secretary of Agriculture and other government officials. The beekeeping industry is grateful for this help from the American Seed Trade Association.

Migratory Beekeeping in Ontario

By G. F. Townsend

Professor of Apiculture, Ontario Agricultural College at Guelph

The beekeeping industry in Ontario is passing through one of its most crucial periods. Just what the future holds for both production and sales is difficult to estimate. Those who have kept bees for 30 years or more will recall that sweet clover was introduced generally in the early 1900's, and by 1925 was mainly responsible for building the industry to its present status on the northern part of the American Continent. The sweet clover acreage in Ontario increased until about 1930. This was followed by a gradual decrease in acreage until 1936. From 1936 on the decrease has been very rapid, until now there is less than 50 percent of the sweet clover that was present in 1936.

Sweet clover is not the only legume which has had the acreage reduced. There has been a rapid decrease in the amount of alsike grown, as it is almost impossible to produce alsike seed in satisfactory quantity in many areas.

Statistical records indicate that the total legume acreage in Ontario is less than 60 percent of what it was 15 years ago. In the early 30's the average honey crop per colony in Ontario was in the neighborhood of 100 pounds. The production decreased to about 80 pounds during the late 30's and early 40's, and now is less than 50 pounds.

An attempt has been made to correlate many factors, but the only relationship which seems significant is the decrease in legume acreage and the decrease in production per colony. These conditions have affected mainly the western and central sections of Ontario. The eastern and northern areas still seem to be producing good crops. Unfortunately, however, 70 percent or more of the bees are located in the districts where we have had almost complete failures during the last three or four years.

These conditions have presented a serious problem for those who wish to continue in business. During the past few years many have moved to eastern Ontario. Most of these moves have been reasonably successful. The eastern areas, however, soon become populated with bees, as much of the land in that district is very rough. The attention then turned to the northern sections of Ontario.

Prof. G. F. Townsend of the Ontario Agricultural College at Guelph.

Many persons know little concerning Ontario's northland and its potential possibilities. Most people think of it as only a lumbering, mining, and fishing country. This area, however, does contain some of the most fertile land in Ontario, and many large farming areas have been developed, and there is still room for much further development. The most important districts are the Timiskaming section, a clay belt area opening out above New Liskeard which is approximately 300 miles straight north of Toronto, and the South Cochrane area around Matheson, which is approximately 400 miles north of Toronto. Milk is one of the main products produced, although much beef raising may be followed in the future, as very good hay crops can be produced. In the farmed areas of Timiskaming and Cochrane much clover is grown. Among the most popular clovers are alsike, red clover, and alfalfa. Sweet clover is rarely found.

Alsike is almost indigenous, and is found wherever the land is cleared. On most freshly burnt or newly cleared areas fireweed grows abundantly. This is a very good honey plant and should prove quite useful for honey production when we know more about it. Fireweed, however, yields nectar well only for the first four or five years after a fire.

Under favorable weather conditions most sections of northern Ontario seem to yield a nectar of some type. In the latter part of May and early June the pastures are covered with dandelion. During the latter part of June and early July the alsike comes into bloom and continues blooming through most of the summer. Alsike is accompanied by fireweed from the middle of July to the first heavy frost.

During the spring of 1947 three commercial beekeepers from southern Ontario decided to move a number of colonies north during the early part of June. One of these had decided to move to Manitoba. He set out with his truckload of equipment and when he reached the Cochrane area in northern Ontario he found that the roads were blocked between there and the Manitoba border. Fortunately, he met a resident beekeeper who was very interested in developing beekeeping in that area as very few bees were being kept there at that time. After some persuasion he finally decided to settle in that section and try it for one year. Apparently Lady Luck was with him, as before the season was over he had produced more than 190 pounds of white honey per colony. All thoughts of moving to Manitoba were abandoned.

During the early part of 1947 a survey was carried out with respect to the possibilities in the Timiskaming and Cochrane areas. A quick survey of the conditions in southern Ontario indicated that we could expect another failure. It was therefore decided that an experimental move of a large number of colonies to the Timiskaming district should be made during the early part of July. This experimental move was assisted by the Provincial Government at the rate of $2.00 per colony. Locations were chosen with the assistance of the Agricultural Representative, and the truck loads of bees were directed to these locations on arrival. Approximately 1300 colonies took part in this move. When they arrived the honey flow was well under way. The production from these colonies varied considerably. Unfortunately, about a week after they arrived the weather turned wet and cool, and very little honey was gathered late in the season. Those who moved north in the early part of June were quite successful and obtained a satisfactory crop compared to southern Ontario, where the production was the lowest on record. From these moves much was learned concerning the methods of moving and the operation of colonies in that area which will be of considerable value in the future.

A close observation was made of the colonies on arrival, and it was noticed that there was quite a difference between colonies which were moved with the entrances open compared with those which were screened. The bees in the screened colonies appeared to be worn out, while those which were moved in the colonies which were not screened were quite active and ready to go right to work. The greatest production was in the colonies which were not screened.

The main difficulties in the past concerning the development of beekeeping in northern Ontario have been the unpredictable weather and the cool springs and falls. The nights from mid-August on are very cool in most years, and brood rearing will likely cease, with the result that most of the bees going into winter quarters are old, having been worn out on the heavy flow. To add to this problem, the springs do not open up until some time in May, and occasionally it is June before good weather sets in and heavy brood rearing takes place. Once the weather does clear, the build-up progresses very rapidly. This rapid build-up is probably caused by the very long days, and is usually followed by a serious swarming problem.

Two procedures are being followed by most of those moving North. The bees are being moved during the close of the dandelion flow in southern Ontario. If the colonies are strong they are split on arrival and a new queen introduced. Both sections will build up on the dande-

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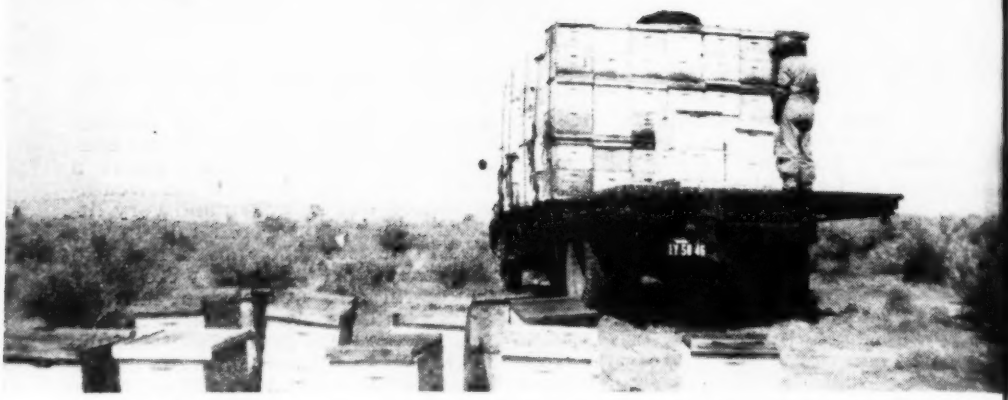


A load of bees that have been traveling all night from the orange belt to the irrigated alfalfa region near the Mohave.

The Migratory Game

By Clarence Tontz, Elsinore, California

In order to become California's first beekeeper, Wm. Buck, intrepid pioneer, had to do it the hard way. In 1856 he left New York with more than 30 hives of bees aboard a steamer. He sailed to the Isthmus of Panama, crossed it, then again placed his bees on a boat bound for San Francisco. The bees multiplied and Buck sold new colonies for as much as $125.00 each—a lot of money in those days. From this nucleus grew the hundreds of thousands of bees that helped build up the West by producing honey and wax, and by pollinating fruits, vegetables, and legumes.

Early California beekeepers hauled their bees out to lonely spots in the mountains and desert regions by wagon and practically lived with them during the active season. Occasionally I run across an old rotting shack and find clues to indicate that it once housed a beekeeper. Last year I bought such a shack that was at least 60 years old. It was built of redwood which, although it had probably never seen a paint brush, was in sound condition. The old beekeeper who once lived in this shack would undoubtedly be glad to know that instead of crumbling away in the dust a good part of the lumber was used in the roof of another honey house—mine.

The lush years of thousands of acres of mountain sage aided by ample rainfall were too soon over, and the beekeepers who didn't care to use the earlier types of motor trucks to move their bees around to catch the various flows in which California abounds, sold their holdings, or in some cases simply abandoned their bees.

In Southern California the first flow of the season which begins in December, is from eucalyptus. Next, in April, comes the orange blossoms. In 1948 we got a better than average crop because the orange blossoming period was irregular. The flow started a little later than usual which is helpful when we are doing everything but stand on our heads to get our bees built up to peak strength. The next helpful factor was the extra heavy blossoming of the trees. But the best factor was that the blooming period was strung out over a three-week period. However, as happens every year, the orange yield was spotty—light yields in some areas. The yield varied a great deal even in a single county. I am referring to one of our smaller counties—not to one of our larger ones which are larger than two or three New England states put together.

In years when there has been ample rainfall many colonies are moved to the sage and wild buckwheat after the orange flow, but during 1948 many beekeepers just let their bees stand due to possibilities of little or no surplus coupled with the high cost of moving bees and a very sorry wholesale price for their honey—in case they got any.

The irrigated alfalfa is the next possible source of honey in California—during July and August. Last year beekeepers averaged a lower than usual crop in most alfalfa areas due to a decreased acreage (many

What's this got to do with beekeeping? Well, frankly not much. But in migratory beekeeping you get to see some nice interesting sights. This is a large field of roses near Hemet, California.

A row of orange trees in full bloom. Picture taken around May 1, 1948. The irregular and prolonged bloom yielded the best crop we have had for several years.

farmers sowed more flax to cash in on a good price) and also because of the scarcity of water.

A few years back beekeepers out here were constantly on the jump. Some moved their bees five and six times a year. Lately, with short crops, the moving has been cut down a bit. Many beekeepers in the irrigated districts of the Imperial Valley practice permanent beekeeping. Because of the short orange honey crops of the past few years, they don't consider it worthwhile to move their bees to the orange, then back to the alfalfa, even though the distance isn't very great.

The future methods of beekeeping in California will be interesting to watch. In spite of our better highways and new, speedy trucks, our production costs are increasing. You may think that should you do your own work, your labor costs don't necessarily increase. As long as your living expenses increase and you could be making more money on a job to meet the increased expenses, then you can figure that your labor can be pretty costly.

During my work with my bees in the bee yard and in moving them from one location to another I am constantly trying to find a short-cut or, as I fondly call it, a "lazy way" to do it. Plain old, misdirected drudgery never did and never will pay dividends, and contrary to common belief, experience is not necessarily the best teacher. In beekeeping, for example, one beekeeper will follow the method of doing a particular operation that has been done—or experienced, if you please—by the majority of other beekeepers. The operation may be irksome, but that is the way it has "always been done".

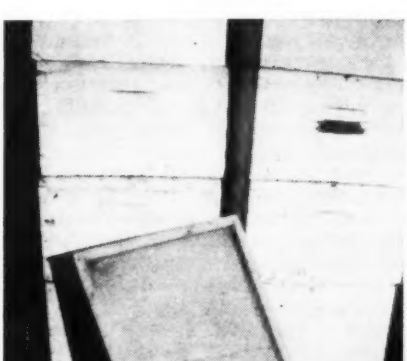
Until a few years ago a colony of bees was always closed up when moved from one location to another. Probably a hang-over from the wagon-moving days when it required a day or so to get to a location. Then, one beekeeper, tired of doing the long and tedious job of closing up his hives before moving, tried moving them with the entrances open. He was satisfied with the results, but when he tried to pass on this short-cut to other beekeepers at bee meetings, etc., he met with stubborn resistance. Some old time beekeepers carefully pointed out to him the various factors that would make it impractical to move his bees without closing the entrances. However, they warned him too late. He had already tried the method and had found it practical before they could inform him that it was impractical.

Today, with a few exceptions, bees are closed up only when moved a great distance such as from one state to another. When closed up the bees get excited and many often smother by piling up against the screened entrance. Some migratory beekeepers carry a large sheet of mesh cloth that covers the entire load of bees in case their truck breaks down. This will reduce the possibilities of damage suits should one break down in a thickly-populated district.

I used to nail down the covers and staple the two hive bodies together (when moving two-story colonies) but I seldom do this any

White or silver sage. A beautiful plant, but not as prolific a producer as the black or button sage.

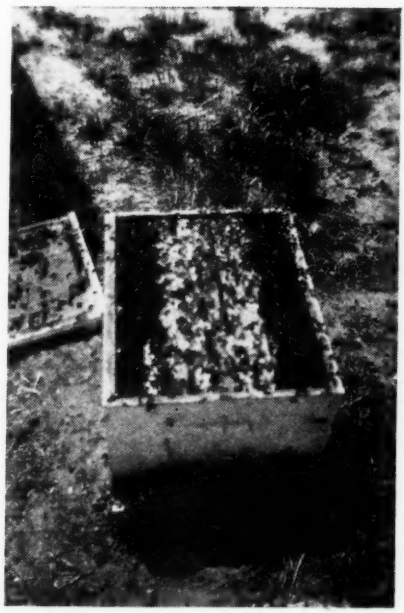
The black or button sage. We are all waiting for that "wet winter" so that this plant that was once King of the California surplus honey plants may again yield a crop of the world-famous honey.



A lightweight board designed for migratory beekeeping Several of these were included in some equipment purchased by the writer. I haven't as yet given them a thorough test. Made of metal on light wood framework, one of these bottoms weighs less than half that of a standard wood bottom.

When setting down the hives care should be taken to see that they don't lean sideways too much — otherwise the combs won't be properly spaced and extra comb as shown will occur.

Glen Smith, apiary inspector of Riverside County, shown examining some of the writer's bees. Although this picture was taken in August with most of the vegetation dried up, the queen was still laying heavily. Probably they have gotten the migratory spirit and figure that they will soon be moved to a location when a honey flow is in progress.



After the orange flow when we strip the colonies for moving to the sage and wild buckwheat, or to the irrigated alfalfa fields, we really strip them as shown. This particular colony yielded 75 pounds of orange honey. The queen had been crowded down to these five frames of brood ringed with honey. The empty space of the hive was filled with empty combs. We depend on the next location to supply winter feed. Sometimes it does with a little for the beekeeper. Sometimes we have to start feeding in September as happened this year.

more. If the bees have the two hive bodies sealed together and the cover is on tight, I can move a load without breaking a single seal. Even if I do, there is little harm done. It is the pounding on the hive with a hammer that really riles up the bees. Moreover, the nails in the cover and the staples in the hives do a lot of damage over a period of years. The small holes split the wood and are a good opening for decay.

I always try to make it a point not to work my bees just prior to moving. When I strip them for moving and am not too rushed I give them a few days to "cool off' and get reorganized. They will stand the trip better and not be such a menace to you and the public.

When moving to a new location it is a wise policy to insure that if the honey flow has not started in the new location the bees at least have something to forage on. If not, they may weaken to such an extent that when the flow does start they are not in a position to gather much or any surplus. You cannot afford to leave much honey in the hive when moving to a location quite a distance away because your "pay load" would be greatly reduced. Neither can you make frequent long trips to check on the bees. Your profits would fly out the window.

Selecting a comparatively level spot on which to set down your load of bees makes a great difference in your bee work. I usually place two rows on either side of the truck. If they do drift a little, so what? The honey harvester is still in the same family. And as far as disease is concerned, if you don't keep it cleaned up you will spread it yourself via the extracting supers.

Yes, migratory beekeeping is a tough racket. But what occupation isn't? Moving a riled-up load of bees is like moving a load of wild cats—only worse. The wild cats can't get out. However, the heavy lifting and the painful stings are soon forgotten when the liquid gold is brought into the honey house to be extracted and packed in glass jars and shiny pails.

XUM

Comb Honey Production

By George Rehman, North Baltimore, Ohio
Taking Off, Grading, and Selling Comb Honey

(Continued from May)

I reverse the first two comb honey supers put on when the top super is about half completed, then if more supers are needed they are added on top.

When supers are fully capped they are raised to the top of the stack, thus breaking the burr comb, the bees cleaning up the dripping honey.

A green leaf or a few blades of grass are used for a marker to put between the full supers to come off the next day and the other supers on the hive.

I use carbolic acid* pads for removing comb honey. The pads are wet with acid at the honey house in the morning and placed in the SHADE with the cloth side up so the moisture will evaporate before going to the bee yards. I do not want wet pads for bees to walk on.

When I arrive at the bee yard, if in a shady place, the acid pads are placed on inner covers used for this purpose and set out in the hot sun with the black metal side up. As the cover is removed on a comb honey colony with supers ready to take off, a hot pad is held over the super, the tips of my forefingers holding the rim of the acid pad above the super for a few seconds. The bees set up a roar and start down. I raise the pad a few seconds to see that there are no bewildered drones on top of the sections, then put the pad on top of the comb honey super.

Do not try to use too many acid pads. As supers are removed they are criss-crossed on the truck.

When the truck arrives at the honey house the comb honey supers are piled in the garage until evening, allowing any extra bees to fly to the garage door windows. The supers are then moved into the workshop ready to clean, grade, and case the comb honey.

Remove and grade comb honey as it is stacked on the work bench to clean. I shall sum up the grading in a very few words. As you remove a section of comb honey from a super imagine you are exchanging places with the merchant selling his section comb honey to the consumer. If you can HONESTLY hold up either side of this comb of honey to the prospective buyer put it in the grade stamped on top of the section. The clean white comb honey must be fastened to all four sides of the section and fully capped.

The markets handling our comb honey prefer to sell only the best and one grade. They say that if they have more than one grade it is too hard to explain the difference to the customer. Any section not weighing 11 ounces net is on its way to the capping melter.

I might add that good comb honey weighs 11 ounces or more net but I prefer to stamp the weight less than the actual net weight.

To fumigate comb honey for wax moth, do not have anything **inside** or **outside** the honey house to attract the moths. Store comb honey to be kept any length of time in clean supers on clean bottom boards. Cover the stack of supers and apply Cyanogas at the entrance of the bottom boards. Be careful. Play safe. Have someone wait for you at the door of the fumigating room.†

There is nothing to hide in a case of good comb honey. Wrap it in plain cellophane.

In these articles I have mentioned white clover comb honey. I do not mean to belittle many other fine honeys produced and sold in their respective localities; also many other good comb honey producers use other methods. I write only of my methods with the aim to improve the quality of comb honey.

*[Carbolic acid is being used by some beekeepers to remove surplus honey. Beekeepers should avoid having the acid come in contact with the combs of honey, as there is danger of tainting the delicate flavor of the honey.—Ed.]

†[Cyanogas is a powerful chemical and should be used with extreme care. Avoid inhaling its fumes.—Ed.]

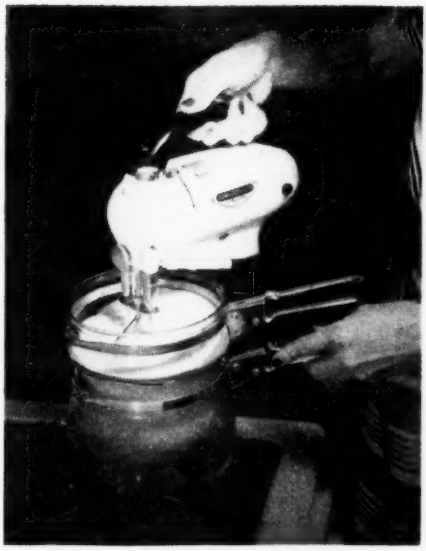
Our Cover Picture

The few hives in the patio of the home of Capt. Charles A. Hill of San Diego, California, have not so far created a problem with visitors to his home.

Honey Frostings

By Mrs. Benj. Nielsen

Frosting is the crowning glory of a perfect cake—and it can do wonders, too, for a cake that, for some reason or other, has turned out a bit less than perfect. In the field of frostings, honey performs a very definite function. Honey frosting is creamy in texture when spread on the cake and remains so to the last crumb of cake it tops—never drying out to crack and drop from the sections as they are cut. This is due, of course, to honey's moisture-absorbing quality. Nature's golden sweet imparts its own inimitable flavor to frostings and points up the flavors of other ingredients used in their make-up.



Fluffy 5-minute honey frosting almost at peak stage.

Grand for spice cakes and gingerbreads is the meringue-like topping which is baked on the cake—remembering always to keep the temperature low—325 degrees F. To prepare it, beat 2 egg whites until stiff; gradually add 1 tablespoon honey, and 1 cup of brown sugar; beat until smooth. Spread on cake batter, sprinkle with ½ cup broken nutmeats, and bake.

Colorful, easy to make, and oh so good is honey jelly frosting which goes like this: Place ½ cup tart honey jelly, 1 unbeaten egg white, 1/16 teaspoon salt in double boiler; cook over rapidly boiling water, beating constantly with electric or rotary beater until jelly disappears. Remove from heat; continue beating until mixture stands in peaks.

Perhaps the most popular frosting of all is the fluffy cooked white topping so easy to twirl on in interesting peaks and decorative swirls. It is no trick at all to make it with a trusty portable electric beater—a rotary one requires determination and lots of vim and vigor. And it is worth it!

Fluffy 5-Minute Honey Frosting

Two egg whites, 1½ cups sugar, 1 tablespoon honey, ⅓ cup cold water, 1/16 teaspoon salt, and 1 teaspoon vanilla.

Combine all ingredients except vanilla in top of double boiler. Beat at mixing speed (2) until mixed. Then beat at speed 9 for 4 or 5 minutes, or until mixture stands in peaks when beater is lifted. Do not overcook. Remove from heat and stir in vanilla.

Honey Butter Frosting

Four tablespoons soft butter, 2 cups confectioners' sugar, 1 tablespoon honey, 2 egg yolks, 1 teaspoon vanilla, 2 tablespoons cream.

Thoroughly cream butter, sugar, and honey. Stir in unbeaten egg yolks and vanilla. Add cream as frosting becomes thick.

Honey Mocha Chocolate Frosting

Four tablespoons cocoa, 5 tablespoons hot coffee, 6 tablespoons butter, 1½ tablespoons honey, 1 teaspoon vanilla, and 3 cups confectioners' sugar.

Dissolve cocoa in coffee; add butter, honey, and vanilla; beat until smooth. Add sugar gradually until of spreading consistency.

Honey Caramel Frosting

Two cups brown sugar, 1 cup granulated sugar, 2 tablespoons honey, 2 tablespoons butter, and ⅔ cup cream.

Combine and cook ingredients over low heat until sugar dissolves. Cover pan 2 or 3 minutes to dissolve sugar crystals. Uncover and cook to soft ball stage, 238 degrees if you have a thermometer. Cool to lukewarm; beat until it reaches spreading consistency.

XUM

Getting Honey From "The Bee"

A Thrilling Adventure with the Giant Bee of India
By Vincent Edwards

In India, about eight miles from Jabalpur, there is a curious place called "The Bee", where immense swarms of bees defend their hide-out against the world. Those who have accidentally wandered into the spot have paid terribly for their mistake. On more than one occasion hapless natives were set upon by millions of honey bees and stung to death, or else chose drowning in the river as a preferable fate. Deer, pigs, and even the lordly tiger, have been victims of these insects.

Some years ago, however, a daring Englishman decided to visit the spot and gather some honey. He did not do it without careful preparation, for he knew all the risks he must run. First of all, he designed a special suit for his own protection. It consisted of a sort of overalls made of metal and tied around the neck with tape, with a bee veil tucked inside the garment, supplemented by riding boots, gauntlets, and two pairs of gloves. Into this suit he was sewed by a tailor so there would be no place where the bees could attack him directly. He took with him two natives who were similarly protected.

The Englishman and his helpers followed a carefully laid-out plan of approach. One of the natives and the leader himself were to climb by a rear path to the top of the cliff so as to be right above the bees' hiding place, while the second helper came up the river in a boat until he was just below them. When the boat had reached the point it was to be made fast.

It did not take the Englishman and his companion long to reach the summit, and then the white man crawled cautiously forward. The leader knew he was close to the bees, for he could hear their loud buzzing, and his nostrils were filled with the sweet smell which is made up of honey, wax, and bees.

Sure that he had found the best point of approach, he returned for his helper. Together the two came to the very brink of the cliff, which was straight down. Looking directly underneath they could see a dense swarm of bees around a massive comb about 50 feet below, while 50 feet beneath that was the boat and the native pilot.

The Englishman wound one end of a long rope around a tree growing at the edge of the cliff. Then, after it had been made fast, he told his assistant to follow his directions closely as he prepared to be lowered to where the bees were located.

It was no easy descent. The Englishman had hardly started before he discovered he would have to swing out into space in order to reach the ledge on which he planned to stand. Hanging down over this ledge was 10 to 15 feet of comb.

Reaching for the cliff with his hand, he gave himself a push which threw him clear. Then, as he swung in toward the rock, has hand came in contact with the mass of comb. The next instant, after some quick scrambling, he had gained a foothold on the ledge.

Immediately the bees were upon him! They swooped upon him in a black mass, the noise of the river below was drowned out by their loud, angry buzzing.

In less time than it takes to tell it, the Englishman was completely blinded, for they had swarmed over his veil, shutting out the light. When he touched his body it seemed to him, through his thick gloves, that he was covered by a thick, soft fur —all bees, of course!

For a minute or two the daring bee man was too dazed to act. But then he realized his strange suit was working perfectly. He was safe and had nothing to fear from the bees.

At his orders the native at the top of the cliff lowered a pail which had been brought along. This the Englishman filled with honey and honey comb, and then let it down to the other native waiting in the boat below. The man quickly emptied it and the pail was drawn up and filled for a second time. Three more times the pail was filled and lowered, and by then the Englishman felt he had had enough.

When the pail was let down for the last time, the Englishman order-

(Continued on page 399)

An Oldtimer in Washington State

By Herman F. Menke, Apiculturist, State College of Washington, Pullman

The picturesque setting for the Washington State Beekeepers' summer picnic on August 7, 1948, was Lake Tipsoe, Natches Pass, in the beautiful Cascades where the beekeepers of this state have met every year since 1933. As I looked at John B. Espy of White Swan, Washington, and then at Mt. Rainier, I couldn't help thinking, "Each of you has a place in this setting today."

Like the position Washington's famous mountain holds in the Cascades, so Mr. Espy stands in the esteem of his fellow beekeepers. Even though this poineer in Washington beekeeping is 81 years old, being born in Page County, Iowa, in 1867, he is keen and alert and seldom misses a thing in the industry to which he is so firmly attached. I thoroughly enjoyed the opportunity to glean something of his early history and that of beekeeping in Washington.

His interest in beekeeping began at an early age when his father bought a colony of bees. This aroused in him a thirst for more knowledge about these fascinating little workers and he read everything about bees that was available. Since he had pledged himself to an apprenticeship in carpentry, he didn't have a chance to buy some bees of his own until 1905.

Starting then with 25 colonies, he increased his holdings until he soon had 100. About this time inspection work was started in Iowa, and John's bees had the honorable distinction of being the first ones inspected in that state. He remembers well the first inspector, Frank C. Pellett.

In 1914, Mr. Espy made a trip to the West, and while he was in Washington he saw the excellent possibilities for beekeeping in this state. He returned to Iowa, sold his bees, and moved to the Pacific Northwest. He started with 50 colonies in 1915 and by 1925 had built these up to 800.

In eastern Washington he observed very readily that apple trees near his bees produced considerably more fruit than those farther away, and he was one of the first men to rent his bees for commercial pollination of fruit trees, an industry which has since become highly important in Washington.

John B. Espy, pioneer beekeeper

For example, in 1934, 60 colonies of bees were placed in the 65-acre orchard of Mr. Bannister in Yakima, Washington. Where the orchard normally produced 20,000 boxes, with the aid of bees it yielded 120,000 boxes. These figures speak for themselves, and it is an interesting early observation on the value of bees to fruit production in this state.

During Mr. Espy's 34 years in Washington, his largest honey crop was in 1933 when 400 colonies produced 30 tons. He also was one of the first bee inspectors some 25 years ago when inspection work was under D. A. L. Melander of Washington State College.

At present, Mr. Espy is retired but travels about the United States to see beekeeping everywhere and to renew old acquaintances. He has already visited 38 states. As is true of all retired beekeepers, he has a few colonies which he enjoys working now and then.

The beekeepers of Washington salute John B. Espy and wish him many more years of enjoyable life with his bees.

XUM

Apparatus for Artificial Insemination of Queen Bees

By C. L. Farrar

United States Department of Agriculture Research Administration
Bureau of Entomology and Plant Quarantine, Madison Wisconsin*

The hope for improving honey bee stock through controlled breeding has become a reality during the last few years. In 1926 Lloyd R. Watson demonstrated that instrumental insemination of queen bees was practical, and since that time numerous workers throughout the world have used his technique with some success. However, present procedures for inseminating queens to make them capable of heading normal colonies were not worked out until the summer of 1944.

There is little likelihood that artificial insemination will be used in the direct production of commercial queens. However, in order to develop, test, and maintain superior breeding stock, artificial insemination is essential.

The close cooperation between the Bureau of Entomology and Plant Quarantine and the Wisconsin and Louisiana agricultural experiment stations has made it possible to perfect the technique of artificial insemination. Many persons have contributed to the advances made, but Harry Laidlaw, Otto Mackensen, and William C. Roberts have made possible the present practical procedure. All three of these men have worked on the project at the Southern States Bee Culture Laboratory of the Bureau, and Dr. Laidlaw and Mr. Roberts for several years in addition at the University of Wisconsin.

Dr. Mackensen is now in charge of bee breeding and genetics at the Southern States Laboratory at Baton Rouge, La. Mr. Roberts is stationed at the North Central States Bee Culture Laboratory at Madison, Wis., where he is also engaged in breeding work. Stock is tested for production characteristics at Madison and for disease resistance at the Intermountain States Bee Culture Laboratory at Laramie, Wyo.

Laidlaw's (1) studies of the morphology of the queen's reproductive organs showed that the valvefold presented an obstruction that interfered with successful insemination, and that when it was lowered with a suitable probe the semen could be properly placed in the oviducts, from which the sperm migrate into the spermatheca.

Mackensen gave Roberts his first lessons in artificial insemination of queens, but these men have worked together in the development of the apparatus† shown in Figure 1.

In 1943 and 1944 a number of queens artificially inseminated by Mackensen and Roberts headed normal colonies as successfully as did naturally mated queens. However, many required two to five weeks longer to start egg laying than did naturally mated queens. This resulted in much loss of time as well as heavy loss of queens while they were in nuclei.

During the summer of 1944 Mackensen (2) found that the use of carbon dioxide as an anesthetic during insemination stimulated oviposition. The inseminated queens began laying in 10 to 17 days after emergence, which is normal for queens that mate naturally. The next spring he found that oviposition of virgin queens could be stimulated by treatment with carbon dioxide without insemination. This discovery has made it possible to obtain drones from virgin queens and later to effect self-sterilization by inseminating the virgin queens with sperm from their own drones.

The delicate microsyringe used by Watson and others had to be made by drawing glass tubing and cementing this finely drawn glass tip to a mechanical pencil or similar device for operating the suction plunger. Hours, or even days, were often required for the operator to draw and polish a tip that was just right, only to break it the first time he used it. It has been difficult to train beginners because the experienced tech-

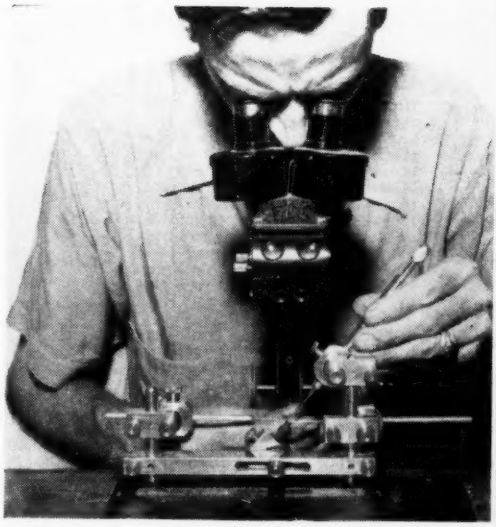
*In cooperation with the Wisconsin Agricultural Experimental Station.

†The Department of Economic Entomology of the College of Agriculture, University of Wisconsin, has arranged to have the Roberts and Mackensen apparatus for the insemination of queen bees produced for sale to institutions or individuals throughout the world as a service to the industry.

nician could not allow anyone to practice with such a delicate syringe.

Roberts (4) has overcome this difficulty by designing an all-plastic syringe which operates better than the mechanical pencil. Duplicate tips permit interchange for sterilization. The plastic tip is less likely to be damaged and is easier to polish than the glass tip.

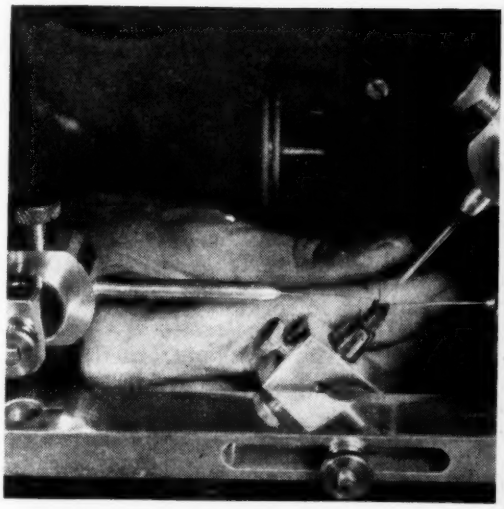
Bee breeding at present is not much further advanced than was corn breeding in 1910. Only after more than 20 years of the combined efforts of most of the state agricultural experiment stations, the Uni-



Mr. William C. Roberts preparing to insert the syringe, left-hand operation. Back view of apparatus.

ted States Department of Agriculture, and some private breeders were farmers able to obtain hybrid seed in any quantity. Improvements in hybrid corn are still being made. It will also take time to produce the kind of bee that beekeepers want, but we now have the tools with which to work.

Preliminary breeding studies indicate that procedures for improving honey bee stock may follow a pattern not unlike that used in corn breeding. By the use of the genetic principles worked out for other forms of life and of proved breeding methods, the honey bee stock may be improved quite rapidly. As soon as outstanding parental lines that combine well are established, rapid progress may be expected owing to

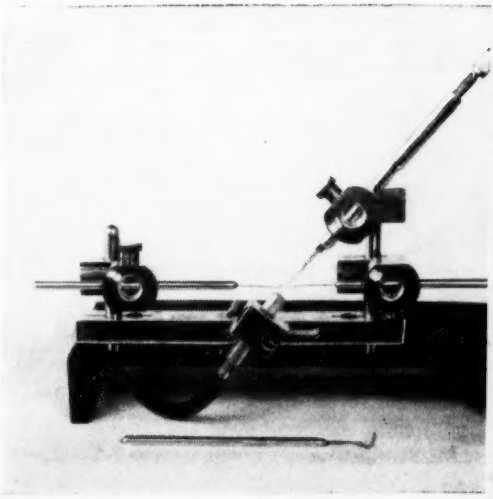


Position of queen and use of valvefold probe with inserting syringe.

the high reproductive rate of the honey bee.

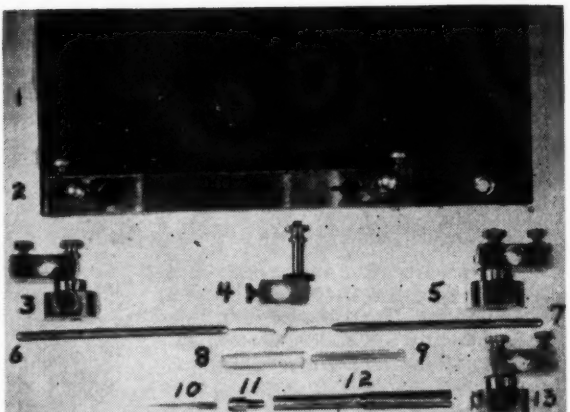
Genetically controlled hybrids should not be confused with the so-called hybrids which the beekeeper now associates with ill temper and a lack of uniform color. These undesirable characteristics can be eliminated from breeding stock in the same manner that good qualities can be built up. The beekeeper who allows his controlled hybrid queens to supersede will, of course, soon have variable stock similar to the present run of bees.

The rate of progress will be limited by the number of persons skill-



Front view of apparatus for right-hand operation.

XUM



Unassembled parts of apparatus: 1. Base. 2. Foundation bar. 3. Mounting block for sting holder. 4. Mounting block for queen holder. 5. Mounting block for ventral plate holder. 6. Sting holder. 7. Ventral plate (sternite) holder. 8. Plastic queen holder. 9. Plastic stopper for queen holder (also delivers CO_2). 10. Plastic syringe tip. 11. Syringe head with rubber dam for plunger seal. 12. Syringe barrel. 13. Mounting block for syringe. 14. Syringe plunger. 15. Syringe turning screw with coupling and universal joint. 16. Valvefold probe for right-hand operation. 17. Valvefold probe for left-hand operation.

The metal parts are Duraluminum with brass fittings. The base is channel steel with black crackle finish. Leather washers are used in 3, 4, 5, and 13 to provide free movement but positive position. Parts 3, 5, and 13 also have set screws with rubber seats for tension adjustment.

ed in the technique of artificial insemination and by the facilities for the selection of parental lines, the testing of progeny, and the production and maintenance of breeding stocks. The judgment of persons engaged in bee breeding, plus a knowledge of genetics, principles of breeding, and of bees themselves, is equally important.

When superior stock becomes available, beekeeping practices will have to be geared to the needs of highly productive colonies. The need for control over environment affecting the physical development of queens produced from breeding lines has been recognized in the testing program at Madison. A queen of superior stock reared under poor conditions may be less productive than a queen of ordinary stock reared under favorable conditions. Conversely, stock of known genetic constitution is equally essential before queen-rearing methods can be truly evaluated.

Anticipating the immediate opportunities in bee breeding, Mackensen and Roberts (3) have prepared a manual on artificial insemination and the handling of breeding stock.

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MIGRATORY BEEKEEPING IN ONTARIO

(Continued from page 351)

lion flow if the weather is satisfactory. This practice eliminates most of the swarming problems. The main honey flow usually is long and lasts over the whole summer whenever weather is suitable. Another procedure which is followed by many and which has proven quite successful is the removal of a nucleus from each strong colony. This nucleus is left behind. Under normal circumstances the nucleus will build up into a suitable colony for winter, and the colonies in the North can either be moved back South or destroyed. Unless the colonies are in a fireweed area, they are moved south during August or September.

In some years package bees are quite successful, especially if the weather is good during the latter part of July and August. However, many seasons in the North bring either poor weather for a build-up of the packages or the honey flow is cut off by poor weather at the time when the packages are ready to produce. With very poor wintering conditions and the success with packages doubtful, the most reliable use of northern Ontario for honey production appears to be on a migratory plan.

Some of the colonies must be moved distances which are beyond that which can be traveled in one night and therefore colonies that are to be moved with the entrances open, special arrangements must be made. Those moving in this manner loaded the bees just before dark and drove all night. Just before daybreak the truck was pulled off the road, away from the traffic where it would not bother anyone, and left there all day. The bees flew during the day and settled down on the truck again in the evening, at which time the journey was continued, arriving at their destination before daylight the following day. During the day period the drivers could obtain some rest. Several operators used this method and reported that it was successful. Most of those who moved North with their colonies screened had anywhere from a few to some heavy losses. No losses have been reported from loads which were not screened.

The only pests which may be encountered are bears, as wax moths are not found in that section of Canada. If the bee yard is placed any distance from a dwelling or near a bush or swamp, precautions must be taken to control damage by bears. The best means of control is an electric fence. This is constructed in such a manner that the bear will have contact with it upon first approach to the bee yard. It is essential that the fence be put up the same day the yard is established or some time before it is established, as apparently once a bear knows the bees are there it will go right through an electric fence.

About 5000 colonies were moved into the Northern areas during 1948. They were moved up during the latter part of May and early June, and placed in allotted locations approximately two miles apart. The weather in the North this spring was unusually dry and this delayed the honey flow considerably. During the latter part of August a heavy flow was under way, but as yet the complete results are not known.

The future of this form of migratory beekeeping which started during the past two years is uncertain. Moving is rather an expensive proposition, and if anything like a half or three-quarter crop could be obtained in southern Ontario it would not pay to move to northern Ontario.

The possible use of fireweed areas during the latter part of July and early August after the bulk of white honey is finished here is as yet unexplored, and I believe it contains many possibilities. Many sections in the northern part of Ontario have large stands of fireweed which are readily accessible, and the Department of Lands and Forests is very cooperative in pointing out these areas.

This method of migratory beekeeping has appealed to those who are situated in the fruit growing districts, especially in the Niagara area where it is unlikely that honey will be produced on a suitable scale. The bees in this section have been maintained mainly for pollination purposes. It is proving quite practical to use the bees for pollination and when this is finished to take them North where in most years they can produce a crop of honey. It is more than likely that those located in the pollination districts will stay in migratory beekeeping.

From the Field of Experience

A Swarm Prevention Method

By E. S. Miller, Valparaiso, Indiana

In the production of extracted honey there is no need for tolerating swarms. With an average of more than 50 colonies I have had no swarms, so far as I know, in the last six years, and I have kept a pretty close watch.

The question is frequently asked "How do you keep your bees from swarming? Do you cut out queen cells"? The fellow who does that certainly has a job, for when the bees are bent on swarming they will start queen cells faster than the beekeeper can remove them and some cells are sure to be overlooked.

For swarm prevention it is important to have young queens and good Italian stock. At about the beginning of the fruit bloom strong colonies wintered in two-story hives are treated as follows: The queen is confined to the lower story and the second story is made a third story by inserting a super of drawn combs between the two sections of the hive. This holds back any tendency to swarm until about the beginning of the clover flow. Then all brood, except one comb, is replaced by drawn combs and the brood placed at the top as a fourth story. Supers are later added as needed. If the queen is not found readily, bees and queen are shaken off and allowed to run in below the excluder. Queen cells, if any, may be removed in ten days.

My experience has been that colonies so treated produced three or four times as much surplus as do those in this locality that are allowed to swarm, averaging annually considerably more than 100 pounds per colony in the last four or five years.

Producing Comb Honey Over Two-Story Colonies

By Marvin Kosanke, Ripon, Wisconsin

Ever since I have been keeping bees I have been searching for a more practical way of producing comb honey. I have always believed that the method of reducing to one brood chamber was contrary to good beekeeping principles.

Having heard about the two-story method I decided to try it last season and the results were very gratifying.

During the first week of our major honey flow in June I selected colonies with brood and bees in three hive bodies. All colonies had active young queens.

I located the queen in each hive and the hive body which contained the queen was placed on the bottom board. On this hive body I placed another containing sealed and unsealed brood.

On top of these two hive bodies I placed two comb honey supers. The first super contained four or more bait sections if I had them. The remaining hive body with mostly sealed brood and bees was placed on top of the comb honey supers. This hive body is left on top of the colony until all of the brood has emerged and then may be used as a super for another colony or returned to the original colony which shall be explained later.

When the bees are working well in the second comb honey super I give the third super to them and perhaps more if the flow is good.

We have a large buckwheat acreage in this area and when it starts to blossom I remove the comb honey supers that are finished and replace them with the hive body I removed previously. As the remaining comb honey supers are finished I remove them and place another full-depth body on the colonies. One of these full-depth hive bodies is left for winter stores and the rest may be extracted. If you have a good market for buckwheat comb honey this is not necessary, but the demand is definitely limited in this vicinity.

Ventilation and Shade Essential

For additional ventilation I placed one-quarter-inch blocks between the bottom board and the lower brood

chamber and between the inner and top cover. I also like one or two additional augur holes in the two brood chambers for increased ventilation. I believe that ventilation and shade are very necessary in producing comb honey.

These colonies received no special attention during the flow, were inspected only every ten days along with the colonies I had for production of extracted honey. I found only two queen cells during the entire flow. I sincerely believe this method fulfills my own particular needs entirely in producing a good crop of comb honey with much less work and it keeps swarming down to a minimum.

[Producing comb honey over two-story brood chambers surely obviates considerable labor. We have used a somewhat similar method in our apiaries to very good advantage.—Ed.]

Virgil and the Bees

By George Twigg-Porter, S. J.

One of the most interesting selections of a most interesting Latin poet is Virgil's "Fourth Georgic". In this short didactic and mock-heroic poem of about 500 lines, much that is said about bees has been reiterated today by scientific apiarists. Some of the ideas are erroneous, but much that is written was years ahead of time. Throughout the pastoral, Virgil refers to the ruler of the hive as the "King Bee"—Virgil, like most Romans, was utterly masculine and saw all power in the hands of man.

Some of his "modern" suggestions occur when he treats of swarming and how to prevent it: He advises that the wings of the queen (King) bee be plucked off—"Nec magnus prohibere labur; tu regibus alas eripe." "It is no great effort to prevent swarming—pluck off the wings from the King"—a modern efficient beekeeper would only have to change the two words: "Pluck" to "clip" and "King" to "queen".

Virgil is modern even in his errors about beekeeping: He says that a tinkling sound will cause a swarm to settle! The very music and rhythm of his words gives the meaning: "Tinnitusque cie, et Matris quate cymbala circum." This noise-making is considered "unscientific", but by how many is this still recommended and used today?

Elsewhere in his poem Virgil tells of the construction of a hive, the need for shade and water, the advantages of gardens close by, and proper manipulation of the hive. Much of what he states he learned first-hand when he used to help his father with the hives on their little farm in Mantua, Italy. He lived during the first century before Christ, but the ideas he has written so beautifully in the hexameters of his "Fourth Georgic" live today and proclaim his glory as a great poet and perhaps the first of the modern beekeepers.

Los Angeles, California.

Bees Display Perfect Teamwork

By Alfred B. Stoddard

I thought that bees were entirely creatures of instinct until the other day I discovered a couple from one of my hives that showed definite signs of intelligence. I had inadvertently left an extracted super in the cellar long enough for a few wax worms to begin their nefarious work. Upon discovery this was placed back on a colony to let the inhabitants clean out the intruders.

The next morning I was looking at the various particles of debris the busy workers had carried out when two of them appeared dragging a narrow piece of wax almost two inches long. It was too heavy for a single bee, but the pair could handle it. After several failures to take off from the bottom board they changed tactics and adroitly carried it up the front of the hive. From there it was an easy matter to launch themselves and their burden. They flew up and away with perfect teamwork until my eyes could no longer follow them.

New Rochelle, N. Y.

A Talk to Beekeepers

By M. J. Deyell

Question: What is so rare as a day in June?

Answer: A warm sunshiny day in May during fruit and dandelion bloom. This year from April 29 to May 6 while most of the fruit and dandelions were in full bloom in this locality we had eight of the most beautiful spring days I have ever seen. It was good to be alive. The mercury got up to 90 during some days. The trees were unusually full of bloom and bees took advantage of their opportunity to collect nectar and pollen.

Usually there is a cool spell during the time fruit trees are in bloom which prevents bees from taking full advantage of the bloom. This year was different.

Scale Hive Makes Unusual Gain

Our scale hive just west of the Gleanings office made a gain of 25 pounds in eight days which is an average of three pounds a day. On one day—May 5—the gain was six pounds. Practically all colonies were unusually populous for early May owing to the comparatively mild winter and favorable weather for colony build-up prior to the spring honey flow.

Strange as it may seem we had no swarming in our apiaries. A few colonies did start queen cells, but to our knowledge no swarms issued. We have learned of some swarming in other areas of Ohio.

It has been said that a good major honey flow is usually preceded by a good spring honey flow. Perhaps one reason for a good major flow is that colonies have an opportunity during a spring flow to build up to good strength in order to take full advantage of the main flow.

Packed and Unpacked Hives

In a recent talk I mentioned packing ten two-story colonies in an apiary of 20 colonies, leaving alternate colonies unpacked. Black building paper covering five or six inches of fine straw constituted the packing.

On May 2 these colonies were unpacked. By the way, it is well to remove packing from hives late in the evening so that the bees are not disturbed during the day while they are flying. If unpacking is done during the middle of the day there

M. J. Deyell

may be considerable drifting of bees from one hive to another. There is apt to be some drifting regardless of when the packing is removed, especially if the hives are too close together.

I shall never forget an experience we had about 20 years ago in one apiary of 100 colonies which were packed in quadruple cases. We went out one morning to remove the cases and packing, assuming that the day would be cold enough for bees to remain in their hives. To our surprise the weather turned warm about noon, just after we had finished unpacking. I have never seen such a mixup of bees in a yard, before or since. After being molested, the bees rushed out in spite of our smoking the hive entrances. They did not have an opportunity to properly orient themselves and consequently many of them drifted to one side of the yard, entering a row of hives along the edge of the apiary. Those hives were so full of bees that large clusters remained over the entrances. We tried exchanging full hives with empty hives. We tried carrying bunches of bees from one hive to another, but to no avail. That experience taught me a lesson that I have never forgotten, and that is to avoid having hives too close together and to remove packing at the proper time.

One of our boys says that if he had to pack and unpack bees each fall and spring, he wouldn't keep bees. Advocates of heavy packing

might say that if he doesn't pack, he may soon have no bees to keep or pack.

To get back to the packed and unpacked hives, I checked the 20 colonies on May 5 and counted the number of combs containing brood in each hive, then tabulated results on record tags available for each colony. I found that the average number of combs containing brood in the hives that had been packed was 9¼ while the average number of combs of brood in the unpacked hives was 10⅜. This means that the unpacked colonies had a little over one frame of brood per colony more than the packed colonies.

The past winter was comparatively mild in this area. I wish we had conducted the experiment during the winter of '47 and '48 when the weather was very cold.

The hives were not weighed but from the appearance of the combs it looked as though the unpacked hives had consumed more honey than the packed hives. According to a number of experiments conducted in previous years, when packed and unpacked colonies were weighed in November and again in April, we found that unpacked colonies consumed more stores than did packed colonies. The unpacked colonies lost between five and six pounds per colony more weight, from November 15 to April 15, than did the packed colonies. We conducted this experiment during four winters.

We shall keep tab on the amount of surplus honey produced by packed and unpacked colonies in this yard and will report later. Assuming that all 20 colonies were of approximately the same strength and quality last fall—and they were so far as we could determine—the amount of surplus honey stored by each set of colonies this season should be the criterion on which the possible value of colony insulation is determined. However, one season's experiment in one locality may not be conclusive. Such an experiment should be carried over a series of years. We know from past experiments that packed colonies use less stores than do unpacked colonies. Now the question is: Will the packed colonies produce more surplus honey than do unpacked colonies? That is what beekeepers are interested in knowing.

Don't Do as I Do But Do as I Say

In previous talks I have emphasized the importance of checking carefully on all items needed, to see that they are in the car before starting to an outapiary. Just the other day when I visited a nearby apiary, I discovered on arriving that my bee veil was missing. I aim to always carry it in the back of the car. But for the life of me I could not think what had become of it so I drove back to the Root Company apiary house and borrowed a bee veil that was not in use. That took time and extra gas.

When I got back to the apiary and began working with the bees it came to me in a flash what had become of my veil. A few days earlier I had visited another apiary. After finishing my bee work that day I decided to take my rifle which is always in my car and walk down along the railroad in the hope of seeing a fox or a crow. One day last fall while walking along the track I saw two large foxes not over 300 feet away, but I had no gun. As I left the yard with my gun some bees followed me out to the railroad track so I left my veil on for a while, taking it off a little later and putting it under a pile of railroad ties at the side of the track. I planned to pick it up on my return trip, but when I came back I forgot all about it and that is why it was not in the car that day when needed.

This forgetfulness on my part may be attributed not to old age, but rather to advancing years. I suspect that those of us who have passed the meridian of life prefer the latter phrase.

June is a Swarming Month

In last month's talk I had something to say about swarms and how to handle them. There are still some beekeepers who permit colonies to swarm and apparently base their success in beekeeping on the number of swarms that issue during the season.

It is a fact that a large or prime swarm that issues quite early in the season will store a considerable amount of surplus honey when conditions are right, especially when the parent hive from which the swarm issued is set onto a new location some distance from the parent stand so that most of the old bees will return to the new hive on the

A colony that shows signs of swarming. It may need another super.

parent stand to receive the swarm, as well as the bees that are in the fields at the time the swarm issues.

The majority of beekeepers nowadays try to control swarming. In other words, they try to prevent a division of the colony, which should mean larger crops of surplus honey.

Give Ample Comb Space

Congestion within the hive caused by lack of comb space for storage of nectar and pollen and the rearing of brood, is said to be the main cause of swarming. It follows then that putting on supers, which means supplying more comb space just a little ahead of the time this space is actually needed, tends to control swarming.

In our apiaries we aim to give each colony one or more supers of drawn combs during the fruit bloom and dandelion honey flow. This gives the colonies a chance to expand. We find it is preferable to leave off queen excluders at the time the first supers are put on, permitting queens to occupy the combs of these supers if they care to do so. Of course, this means a little more work later on when queens are put down into the brood chambers under queen excluders. Some do not use excluders. They are not absolutely necessary but they do keep the queens down where they belong.

One advantage in having one or more supers on each hive when the main flow starts is that if honey comes in with a rush the bees have comb space for storage of nectar and they are not so likely to start queen cells.

Top Supering

We have practiced top supering for a number of years and like it, mainly because it saves a lot of work lifting partly filled supers off and on at the time the fresh super is given. In top supering all one has to do is to remove the cover and if the last super given is half filled and the flow is likely to continue, another super is added on top.

If weather conditions are such that swarming is likely to occur, it may be necessary to do some Demareeing—that is, lifting most of the combs of brood out of the brood chamber up into one of the supers above the queen excluder, replacing the combs of brood with empty combs, and being sure that the queen is left downstairs. E. S. Miller of Valparaiso, Indiana, practices Demareeing each year and says that no swarming occurs. While this may seem like a lot of work, it may pay in the end where swarming is likely to be troublesome.

During sultry weather when thunder showers occur, bees are kept in their hives during parts of days. While they are at home they may start queen cells. This kind of weather is likely to prevail during some seasons in the alsike clover regions.

In the sweet clover and alfalfa regions of the West, swarming is not likely to occur after settled fine weather comes, because the field bees are out of the hive most of the day and this relieves congestion within the hives.

Keep Ahead of the Bees

We should try to keep at least one step ahead of the bees right through the season. If we get behind we may have some swarms and we may lose a part of the honey crop.

It is well to have enough supers on hand to hold the crop, especially where a series of outyards are operated. A sideline beekeeper with only one apiary may get on with a minimum number of supers because he can extract honey out of the filled supers, if they are properly capped over, then put these supers back on to be refilled.

A Word About Producing Section Comb Honey

For some years we have been experimenting with producing comb honey. I am now satisfied that it is possible to produce it profitably—if the season, locality, and management are right. Here is a method we have used during the past three years:

Colonies are built up to peak strength in two or three story standard hive bodies. When the main flow starts put at least two comb honey supers on over the lower brood chamber, making sure the queen is below. More are added later, as needed. Place a queen excluder on top of the comb honey supers, then place what was the second hive body on top of the excluder. If the colony occupied three stories the brood from the upper two bodies can likely be segregated into one body and the remaining body with combs put on a hive run for extracted honey.

This hive body with combs of brood and bees now above the queen excluder may be left there for about two weeks, or until most of the brood has emerged from the combs. The bees should then be shaken off the combs in front of the hive and this super freed of bees, is given to a colony run for extracted honey. If an excluder were not used under the upper brood chamber the queen might go up into this chamber.

Obviously, putting the second chamber above the comb super temporarily accomplishes two purposes: (1) It gives the colony a chance to expand, thus relieving congestion; (2) it gives the bees a chance to circulate through the comb supers and start work in them, perhaps sooner than if supers were placed on top of the double brood chamber.

It is necessary to check combs in the bottom chamber every six or seven days and destroy queen cells if any are found, for at least three weeks, or until the bees have settled down to work and danger of swarming has passed.

The upper brood chamber that is put onto another hive should be marked "Food Chamber" to be returned to the colony from which it was taken, after the surplus comb honey supers are removed at the close of the season.

There are other details that perhaps should be mentioned, but lack of space forbids it at this time. If some of you try out this method let me know how you get along.

A packed hive used in experiment. Notice the small pieces of wood tacked around the middle front ¾-inch augur hole entrance.

Letting Customers Taste Honey

By W. H. Ford, McIndoe Falls, Vt.

While I know nothing of the problems of the big producers I do know as a small producer with not much time to put into the sale of honey, I sold 2500 pounds, about half retail and the rest wholesale, which brought an average of 21 cents per pound clear. The producers who think they can sell any kind with no care as to looks and quality, at wartime prices, are making a big mistake. Put a fair price on honey, have clean containers, let the customers sample the honey, and it will sell. I have found the biggest help in sales is to let the customer taste the honey. To do this I have a supply of small wooden spoons handy. When a customer comes into the store I talk bees, then give him a taste and usually I make a sale.

A lot of honey is spoiled in overheating. Probably I am all wrong, but I heat my honey to only 140 degrees. It tastes much better than honey run up to 160 degrees.

Siftings

"Hay is something we must make between the time we get out of it and the time we hit it."—Phoenix Flame.

"Switzerland has broken the record hitherto held by the U.S.A. for the oldest known queen bee. In 1947 there were, in the same apiary, a queen emerged in 1938, her daughter, granddaughter, and great granddaughter, all at the head of colonies. The old lady's brood comb was a good performance for a nine-year-old queen. It will be interesting to learn if she has reached the age of ten."—From an article "Recent Advances in Practice and Science" by Annie D. Betts appearing in "The Beekeeper's Annual" for 1949, edited by Herbert Mace, Harlow, Essex, England.

"No pollen goes bad so long as it is covered with honey and soundly sealed."—W. J. Wadey in "Behavior of Bees".

"I found that with the South African bee of the yellow Transvaal species the best time of the year for queen rearing is during a heavy honey flow. The bees then do not rob, they are well fed and therefore less inclined to sting, there are ample bees and failure is difficult."—W. P. Boxall, B.Sc., in February, 1949, South African Bee Journal.

A Riddle: What being has but one grandfather, numerous brothers and sisters, many daughters but no sons, and dies before its oldest child is born? Answer: A drone. February, 1891, "The Beekeepers' Guide" published by A. G. Hill of Kendallville, Ind.

"The Victorian honey flow has been very erratic this season, and autumn prospects in most parts of the State are not encouraging. Apiarists would be wise to conserve the stores on hand."—The Journal of Agriculture, Victoria, Australia, for February, 1949.

[The season in Australia is six months ahead of U. S.—or are we six months ahead of Australia?—Ed.]

"The Army, Navy, and Marines may save our country, but it takes trees, grass, and legumes to save our soil." A. G. Pastian, Bradley, S. D.

W. J. Oates of Lompoc, California, tells of an incident when a blue jay alighted on a bee hive with disastrous results. The bees attacked at once and when he took wing he was followed by a mass of bees in angry pursuit. He flew but a short distance until they brought him down. When picked up the bird was dead with half a dozen stings in his head. Other dead jays were found about the apiary and none is to be seen there since.—April, 1949, A.B.J.

"Prolific queens are an absolute necessity for strong colonies and strong colonies are the only ones that give us profit."—A. I. Root in June, 1873, Gleanings.

Why do bees swarm? "Upon no other subject connected with beekeeping have I studied so much, tried so many plans, or made so many failures as with regard to prevention of swarming. If I knew all about just what makes a colony swarm, I would be in better shape to use preventive measures, but I don't know about it. Of course, I know that want of room and want of ventilation may hasten swarming and possibly some other things of that kind, but after all there is a good deal of mystery about the whole affair."—Dr. C. C. Miller in his "Fifty Years Among Bees."

"One-Track Mind—Bees are thorough in whatever they do, but they do not have room for more than one idea at a time. Once an object is fixed in their minds they set out to do it with tenaceous determination." —April, 1949, B-Z-B World, published in Alhambra, Calif.

"Two things worth knowing: (1) While working in the apiary never wear a felt hat or woolen clothes. A nice clean straw hat and cotton or linen garments will not excite the anger of bees. (2) Never feed bees by putting honey in dishes and setting them outside the hives. The beekeeper who does so will surely regret it."—Henry Alley in "Beekeeper's Handy Book".

Second Glances

By C. M. Isaacson

Bee Fever is world-wide. Even in Bolivia this pleasant "disease" seemed to reach almost epidemic proportions in the capitol region, according to L. M. Shedd's account (page 273). Bees have never lost their age-old fascination for man everywhere. I guess that is why many of us stay in the profession through all discouragements. And by the way, that hint for keeping a bicycle chain in good condition should be of considerable value.

Real improvement of stock is possible through experimental work such as has been carried on in Pelee Island in Ontario, and Kelley's Island, only a short distance away in Lake Erie, but a part of Ohio. As the Editor suggests, it is certainly to be hoped that the two projects may coordinate their work before too long. The isolation of each place allows almost a certainty of pure matings, and the widespread use of queens produced will make for development of strains useful under varied conditions. The careful observation and notes required of cooperators in the Kelley's Island experiment should help considerably also (pages 275, 279).

More experiments on sulfa needed (page 281). The title of this little item is enough—we do need just this.

A constantly strong and contented field force is the object of Mr. Rehman's manipulations for producing comb honey (page 282). His method requires work at the right time but is simple in plan. And his advice against too heavy supering is especially sound in comb honey work if one is to avoid a lot of partly finished sections.

Beggars cannot be choosers, says the old saying, and beekeepers are in that class when it comes to comment on the Department of Agriculture purchase of surplus honey for the School Lunch program. It may be true that the action leaves a lot to be desired, but it is a stopgap in a bad situation at least, and as such we must accept it (page 283).

C. H. Pease belongs to a vanishing school—the individualist who not only dares, but delights to stand alone (page 284). We are all in debt to such people and for every one (oh, yes, there are some, even nowadays) we should be thankful. For the smaller beekeeper, especially, his "wrong" ideas can be very much right, and some of the principles involved can well be taken note of by everyone. For instance—if it weren't for the hauling problem, fall and spring (especially the latter when outyards are miles apart), I know cellar wintering is superior. When colonies packed with 80 pounds of good honey starve between October and May—well, outdoor wintering is not perfect yet. I saw it this past winter.

Sugar syrup feeding is undesirable except in emergencies, say the experimenters at the Rothamsted Station in England. That is right. Dry sugar is much to be preferred—and of course honey in the comb is best of all (page 288).

A queen has no set route in moving around the hive, I believe. I have seen them go over either top or bottom—less often around the ends. I would suppose she goes wherever it may be handiest when the decision to enter a new comb is reached. I might mention, though, that she usually begins egg laying first on the farther side of a comb next to her established brood nest. This is especially true in warm weather (page 290).

Beekeeping on a schedule is not always possible—should I say, rarely possible. Editor Deyell gives excellent advice when he mentions weather variations, etc., and how they can affect our plans. Of course, there are fundamentals but they can not always be applied at the same period or in exactly the same way. Good queens and **plenty** of food are probably the two most unvarying essentials (page 294). And watch the food supply after the spring flow period. That cannot be overemphasized. A comb of brood takes a comb of honey!

"Spend a dollar to make one" is an old maxim that goes along with the ones quoted in the Honey Institute (page 311). Our dollars spent by the Institute have made us manyfold. Let's venture more of them—each year!

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Editorials

Honey Price Support On April 27 the House Agricultural Sub-Committee held a hearing in Washington on the Morrison and White Bills which propose to support the price of honey at 90 percent of parity. Congressman Walter K. Granger of Utah presided. Officials of the Department of Agriculture and representatives of the beekeeping industry were requested to testify. A great deal of testimony was given on the important place the bee holds in the country's agricultural development from the standpoint of the pollination of many essential crops.

The problems facing the industry were ably presented by members of the industry and the Committee showed a great deal of interest and asked a number of pertinent questions.

They seemed deeply interested in why more tangible aid had not already been given to the industry by the Department of Agriculture which apparently already has the necessary legislation to support honey prices. It would seem that honey will most certainly be included in any general farm price support program that is adopted by Congress.

The Federation's original request to the Department of Agriculture was for a 12-cent bulk price or 75 percent of parity, whichever was the greater. It is reasonable to guess that if a support price is undertaken parity will be computed on bulk containers and it is quite likely that 90 percent of parity will not be far from the 12-cent figure originally proposed. We might also guess that some variation in price is likely between table grade and industrial grade honey.

Local Motion Pictures More and more, beekeepers are having motion picture cameras and are taking motion pictures of gatherings of beekeepers, interesting demonstrations with bees, honey exhibits, and the like. This always helps and the more widely local pictures of this kind are shown, the more interest is created in honey—and that is what everyone wants. People ordinarily not interested will always pause to see a motion picture, and if the picture shows natural history and something beautiful, so much the better. Honey needs all the publicity it can get.

Industry's Hope Lies in the Younger Generation A few days ago we talked on bees to 1000 boys and girls of the grades and high school in a nearby town during general assembly. We took along an observation hive of bees, a bee shipping cage, a queen bee in a mailing cage, and a miniature hive. The youngsters, to use a slang expression, "ate it up". At the conclusion of the talk one teacher said, "I wish we teachers could hold the attention of boys and girls as you do."

Just why were the youngsters interested? Simply because the program was different and the subject of bees is always appealing.

As the 1000 boys and girls filed past the observation hive to see the workers, drones, and the QUEEN in particular, we realized as never before the opportunity beekeepers, beekeepers' associations, and others affiliated with our industry have to disseminate useful information on bees, honey, and pollination.

It has been said that we cannot teach an old dog new tricks. Most adults, unless they are young in spirit and refuse to get into a rut, are somewhat "set in their ways" and do not take on new ideas readily. Most young people, on the other hand, are open-minded and eager to learn all they can.

It seems apparent that leaders in our industry must focus more attention on educating the youth of our nation in beekeeping which should include a knowledge of honey and other products of the hive, as well as pollination. The future of beekeeping lies with the coming generation.

Don't Get Bees Stirred Up It is a well-known fact among experienced beekeepers that colonies of bees resent being handled on a cool day or during a dearth of nectar, especially following a good flow. When a source of nectar ceases, bees naturally search

for other sources and if the inexperienced beekeeper opens a hive during this time he had better have his smoker well lighted and bee veil properly adjusted. In fact, it is preferable under such conditions to defer hive manipulations until a later date.

Beginner beekeepers having bees in towns near dwelling houses should refrain from opening hives during weather unfavorable for bee flight. Those who do get bees stirred up may and usually do become exceedingly unpopular among neighbors.

Bees are needed in towns and cities to pollinate certain fruits and vegetables. Owners of bees should use every possible precaution to avoid having people or animals stung by restricting hive manipulation to warm weather when bees are working well.

Crop Prospects in the North Sometimes when the rain is pouring down we may imagine similar conditions prevail generally over the state, when in fact a few miles away no rain has fallen. Local rains may favor some localities and slight others, and may incidentally make for some beekeepers the difference between success and failure in securing the maximum honey crop.

Clovers, especially shallow-rooted plants like white Dutch, Ladino, and alsike, should have plenty of moisture preceding bloom, and showers periodically during the blooming period. Sweet clover and alfalfa, having long roots, can withstand drouth.

From the semi-monthly report as of May 16, 1949, put out by the U. S. Dept. of Agriculture, we note that plant conditions are generally favorable except in portions of the west north central states and the southwest.

Unfortunately, in parts of the plains area sweet clover acreage has been reduced somewhat by weevils and winter killing.

In areas of the North where white Dutch clovers grow in pastures, present prospects appear to be favorable for a honey crop. Rains during April and early May caused the plants to develop normally and recent copious rains have supplied needed moisture.

We are not making any predictions because in the past we have been too often wrong. However, it is about time for another white clover year. If it comes, it should mean exceptionally fine-flavored honey. In fact, there is none better. Colonies are in exceptionally good condition ready to take full advantage of any honey flows that materialize.

We have learned from experience that the best time to talk about a crop of honey is when it has been taken off the hives and is in the cans.

Consumption of Candy Versus Honey A newspaper clipping recently received gives the average per-capita consumption of candy in 1947 as 19.3 pounds. The record consumption of candy occurred in 1944, with 20.5 pounds per person.

The per-capita consumption of honey in the United States is around 1½ pounds. It would appear that one way to increase the per-capita consumption of honey would be to produce more of it and then advertise it.

If twice as much honey were produced as is produced today—in the neighborhood of 200 million pounds —something would have to be done about marketing it. One trouble with honey is that it has not yet become a staple article of food. It appears on the market in late summer and fall and is considered by a great many people to be a winter or cold-weather food. It really should be an all-year food because it is a carbohydrate — an energy food — and people require energy in hot weather as well as in cold weather. If there was a greater demand for honey there would be more incentive for commercial beekeepers to enlarge their holdings and for beginners to get into beekeeping. Certainly our country needs more bees to pollinate the clovers, fruits, and vegetables that require pollination.

Bees for Pollination It is doubtful whether the average farmer realizes the importance of having honey bees near fields of clover for seed production, although farmers are gradually becoming more bee-minded.

From work done a few years ago by Dr. W. E. Dunham of Ohio State

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University it was found that 82 percent of the blossoms in a red clover field were pollinated by the honey bee, 15 percent by bumblebees, and 3 percent by other insects.

The size of the pollinating job for one acre of legume bloom is much greater than the average person realizes. One acre of alsike or red clover in bloom contains 216,000,000 individual florets. To secure maximum pollination each floret must be visited by a pollinating insect.

Dr. Dunham mentions the fact that under experimental conditions where 100 percent pollination occurred with alsike clover and yields of from 12½ to 20 bushels of seed per acre were secured, from 4 to 6 colonies of bees per acre were required.

Under such conditions honey production would not be profitable. It would therefore be necessary for the farmer to rent the required number of bees in order to increase seed production. Some farmers are actually doing this.

It seems apparent that agriculture is becoming more conscious of the value of the honey bees for pollination.

Ladino Clover Reports continue to come in concerning the increased use of Ladino clover, not only in Ohio but in other northern states. Ladino clover is a mammoth or giant variety of the common white clover of lawns and pastures. Its upright growth consists of unbranched leaf and flower stalk that grows from the prostrate stems that spread over the ground.

This clover finds its most profitable use in permanent pastures. It is especially desirable in combination with smooth brome grass and alfalfa. Ladino clover is somewhat more drouth resistant than alsike or white clover. The survival of this clover is promoted by the growth of roots from the numerous joints or nodes of the creeping stems where they touch the ground. A single mother plant of Ladino clover may form a mat covering an area of two or three feet in diameter by the end of the second year of growth.

There are varying reports as to the amount of nectar secreted by Ladino. Obviously it does not compare too favorably with Dutch white or alsike, but it does yield some nectar and it seems possible that after it has become acclimated to an area, the honey gathered from it may increase.

In the absence of white and yellow sweet clover in many areas of the North, Ladino clover and alfalfa are welcomed by beekeepers, even though the honey crop secured may not equal those gathered from sweet clover.

Early Bee Smokers In this country, Moses Quinby is usually credited with having invented the first bellows bee smoker—at least in 1870 Quinby introduced such a smoker which was a decided step in advance over other methods of introducing smoke among bees.

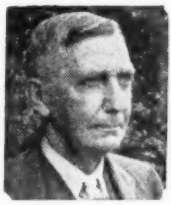
Sometimes we forget that many of these ideas were anticipated by earlier writers in England or Continental Europe. In "The Honey Bee" by Edward Bevan, M.D., 1838, there is certainly a practical suggestion for a bee smoker. The author looks upon such a contrivance as one to be used only in case the keeper of the bees or his assistant do not smoke tobacco. In that dire event he described a fumigating box attached to a nozzle and a pair of bellows. This was placed in the hands of an assistant who had to keep the nozzle going gently all the time to prevent the fire from going out. The illustration in the book shows a cylinder fitted with a piston, a handle to the piston on one end, and on the other end a cone-shaped snout for the fire and smoke. Broadly speaking, the piston in the cylinder constituted a bellows. The fuel used apparently was confined to tobacco. The assistant was urged "to be cool and steady lest by dilatory tactics the bees be aroused to the displeasure of cottagers near by".

There is even the caution that if the beekeeper smokes cigars he should drink—or at least rinse his mouth—with a little malt liquor, and to wash his face and hands with it, the inference being that the bees prefer liquor to tobacco.

Some lover of old books may discover some practical reference to a bee smoker operated by air blown from a bellows before 1838. That smoke had been made use of before then is certainly known, but did anyone before 1838 come so close to describing the modern-day bee smoker as did Edward Bevan, M.D.?

From North, East, West and South

SOUTHERN CALIFORNIA, May 1



The weather was changeable during the past month. The change was from cold to cool rather than from cool to warm. Very few days were really warm. We have had considerable cloudy weather with prospects for rain reported, but it only materialized into sprinkles that would hardly wet through a white shirt.

Crop Prospects are not all promising. Orange bloom is about one month late. Many beekeepers had their bees ready almost a month early, but fortunately most of them had surplus combs of honey to feed. Black sage, our first surplus honey of any importance from our native shrubs, is struggling to put out some light short growth. What it could do with a few inches of rain! The two great irrigated valleys—Imperial and Palo Verde—will probably produce their average crop of 50 to as much as 100 pounds per colony.

Miscellaneous: While eucalyptus did not yield nearly so freely as in some seasons, still there was a distinct flavor to the earliest honey where there were trees within reach of the bees.

Swarming has been quite general and some beekeepers have replaced their winter losses with swarms. Many of these swarms were very large—big enough to fill a wash tub.

May finds practically all of the migratory beekeepers who move to the orange with bees moved in, set up, and ready for the honey flow, be it great or small.

We never lose hope and a good rain in May or even June may bring a much brighter prospect. Such things have happened in the days long gone by and what has happened can happen again.

Wild buckwheat, one of our best honey yielders of southwest California from the earliest honey days, is all ready to go and needs only moisture. It is what we usually term a June bloomer. Some remarkable yields from buckwheat were reported by such old-timers as Harbison about the years '84 and '85. Beekeeping is carried on in a much different way compared to that of only a few years ago. Instead of a beekeeper doing all of his own work with probably a little help when extracting, he is likely to employ one or two men by the year. This has been a pretty thorough tryout as to the wisdom of beekeeping as a big business. While there is not much information along these lines, just keep your ear to the ground and you find many beekeepers guessing. The price of honey has set them all figuring, guessing, and wondering just what it costs to produce honey on a large scale.

When a boy, we overheard some remarks by a group of farmers. It was a question about a farmer keeping books. One fellow said, "You can not keep books on a farm—you would be broke all the time." Maybe the little fellow who does all of his own work and counts the money he gets for his honey all profit is the happy beekeeper. With the West Coast filled with bees well up to capacity in many sections and our great sage and wild buckwheat ranges facing a short honey crop, production is becoming a bigger problem. If the big beekeeper is to carry on with six to eight cent honey, he will have to use a sharp pencil to figure a way to meet the prices we have to pay for all other products.—L. L. Andrews, Corona, California.

NORTHERN CALIFORNIA, May 3

Weather: In my last report I called attention to the splendid rains which fell during March and indicated that prospects were good at that time for plant conditions being improved over last season. We have now had 39 consecutive rainless days, a record of long standing for this time of year, and a situation which augurs poorly for any prolonged nectar flow from native plants this summer. April generally provides sev-

eral showers and farmers generally depend on this moisture to aid the growth of grain pastures and cultivated crops. Fortunately, the weather has not been unseasonably warm and the drying north winds have not been frequent enough to further deplete the soil moisture. Some good rains in May will improve the plant conditions.

Condition of Colonies: Our delayed spring caused a majority of the colonies to delay brood rearing by at least two weeks and this resulted in a slow build-up for package shipments. The swarming season, which frequently starts during the last week in March, was also delayed and did not seem to be as acute. Those colonies which had ample stores of honey and pollen in the fall came through with normal population and made excellent colonies from which to shake packages or to divide. In fact, many of these swarmed if they were not shaken or otherwise taken care of before the second week of April. At the present writing the package bee season is drawing to a close and the producers are feeding their colonies, or moving them to the mountains, requeening and getting things in shape for any honey flow which may be available this summer. Colonies which have not been shaken are in the third story and are storing surplus where plant conditions permit. The weather conditions were ideal for queen rearing the last week in March and during most of April. For this reason queens should be satisfactory if properly produced and the supersedure rate should be considerably below that of last year when conditions were so adverse. A recent visit to some of our queen breeders indicated that each one has strong cell builders and realizes that a package or its colony is no better than its queen. It was noted that none of the queen breeders spared the brood bees, combs of pollen, or sugar syrup in the production of the cells. One producer was feeding straight honey because he found it better and cheaper than feeding sugar syrup. The cells in his colonies were long and beautifully constructed.

Condition of Plants: At the present writing there are fields of mustard in full bloom. Ladino clover and white Dutch clover are both coming into bloom, and the honey locust is shedding its blossoms. Wild radish, some chickweed, in protected places, also filerae, provide bees with sufficient pollen and nectar to stimulate brood rearing. In the mountains the manzanita is yielding plentifully at certain elevations with the higher levels still to come into bloom. Fruit bloom, of course, is past. Eucalyptus has not bloomed in Northern California, due to injury from the cold of winter, but many of the trees are heavily budded and a late bloom may be in prospect. Citrus is just coming into bloom and a heavy bloom is indicated in spite of or probably because of the exceptionally cold winter. Beekeepers who remember two of our previous cold winters recall that in each case they were followed by excellent nectar production from citrus. The native plants must have more rain to last during the hot summer months.

Chemical Poisoning of Bees: It seemed that we might be "out of the woods" on this poisoning deal when some newer chemicals were substituted for the arsenicals in the control of insects on orchard and field crops and I believe we are far better off than only two years ago. However, several apiaries have been injured this past season from the application of both chlordane and of DDT to alfalfa grown for seed. In one case 561 colonies, strong enough to cluster on the outside of their hives, were distributed in an alfalfa seed field which was treated later with 5 percent DDT while in full bloom. Land machines were used on each of five different days to cover the field and the dust hung over the alfalfa like a blanket of fog for a considerable time after each application. Within a day after the application the strength of the colonies was considerably reduced. An average of 20 pounds of honey was secured for the season, between 200 and 250 colonies had died before spring, and the others had built up too slowly to yield any surplus of bees for packages. As far as the seed grower and the beekeeper could determine, no arsenicals had been supplied in the vicinity of the field or near where the bees were moved for the fall and winter. Another beekeeper's colonies which had been located in an alfalfa seed area

had stored a super of honey before much DDT had been applied and but little thereafter. He likewise reported that they built up too slowly to yield a normal quantity of package bees. A third beekeeper had colonies in several apiaries to build up so slowly this spring that they were too weak to shake a normal amount of surplus bees for packages and the only chemicals they had been exposed to were chlordane and DDT. For maximum production it has seemed desirable to have from three to five colonies distributed throughout the fields of alfalfa grown for seed, but from the point of view of the welfare of the bees it is doubtful if the colonies should be placed in the field where the hives and all of the bees leaving the hives will be exposed to DDT. It is true that in some instances colonies of bees have not been appreciably injured by the application of DDT to alfalfa, but it seems the better part of wisdom for the beekeeper to place his hives outside of the field if it is going to be treated with DDT while the bees are working the blossoms, or not to move colonies into the area until some days after the applications have been made.

2,4-D is gradually changing the value of many beekeeping locations in Northern California through the elimination of native pollen and nectar plants. Also, much damage is being done to various crops by the promiscuous and careless use of this chemical. Claims amounting to $600,000 were filed during 1948 in Sacramento and adjacent counties for damages to untreated crops on neighboring property to which 2,4-D was applied as a weed control. These damages and suits are causing quite a stir at county, state, and national levels of legislation. Insurance companies are having a difficult time to adjust these claims and are making their policies more specific, their rates higher, and are eliminating altogether some of the chemicals which are most toxic to plant or animal life. Many growers are experiencing for the first time some of the serious losses from drifting chemicals with which the beekeepers have been confronted for a number of years, and they do not like it either. The only logical answer is for greater control of chemicals **before** they are applied and the requirement that they must be confined to the fields treated. When injuries to plants are caused by drifting vapors or impregnated soil, such chemicals should not be sold for agricultural use.—J. E. Eckert, University of California, Davis, Calif.

TEXAS, May 9

Weather: The temperature during April was below the usual average. Rainfall was above normal in practically all areas of the state with many localities reporting the heaviest rainfall for any month in recent years and some floods in lowlands and river valleys. The cool temperature, many hours of rainfall, high winds, and cloudiness interfered with the field activities of bees. However, soil moisture for plant growth is now assured for coming weeks.

Bees, Plants, and Honey Crop: The abundance of wild flowers everywhere presents a picture of a vast flower garden. Bees are gathering large supplies of pollen from many sources, but the income of nectar is barely sufficient for the daily need of the colonies. Earlier, in different areas bees made some gains from Mexican persimmon and from youpon. A good flow was reported from guajillo and mesquite in some localities near the Mexican border and also near the lower coastal area. Catsclaw bloomed abundantly, but cool rainy weather kept the bees in the hives for much of the time and also caused shedding of the early mesquite bloom. At the present time colonies are strong, but the honey flow has been disappointing and beekeepers are seeking locations where a flow is in prospect. In southwest Texas where winter frost killed back many important shrubs there is little prospect for a honey crop except possibly from the summer mesquite bloom. In a few localities horsemint and marigold are in sufficient abundance to offer some promise. In central Texas where vetch and sweet clover are grown extensively the blooming period has been considerably delayed. The

acreage grown to cotton is expected to be fully as great as last year and many yards will be located in the cotton area for the summer.

Market: So far no honey of the current season's crop has appeared on the market. Grocers are well supplied with last year's crop with prices unchanged, but consumer demand slackening off. Bottlers are seeking lighter grades for blending, but only darker grades remain in producers' hands in sizable quantity.

Miscellaneous: Shippers of package bees and queens report considerable reduction in demand and some cancellation of orders booked earlier. The weather has been unfavorable for yard operations with considerable destruction of queen cells and loss of virgins occurring, but most shipments have been going out on schedule. While winter and spring loss of colonies in Texas was not large and swarming not abundant, relatively little increase in colony divisions will be made. Many colonies are being united and the number operated in Texas this year will be considerably less than in recent years. With the rather unsatisfactory market condition there is little incentive for beekeepers to operate the usual number. Reports from widely scattered areas of the state indicate that sacbrood, chilled brood, and paralysis are present among the colonies. — A. H. Alex, San Antonio, Texas.

MANITOBA, May 4

Weather: My last report was written on December 3. Since that time we have been through a fairly normal winter with a very concentrated cold spell throughout January and February. Weather bureau statistics for Winnipeg might prove interesting to some of our friends from the balmy regions of the Southern States. Note the mean of minus 6.2 degrees for the month of February.

	Mean	Min.	Max.
January	—1.8	—43.4 (20th)	39.8 (6th)
February	—6.2	—34.0 (13th)	23.7 (17th)
March	15.8	—17.2 (8th)	40.1 (28th)
April	42.6	15.5 (18th)	87.8 (28th)

Snow was deeper than usual in southern Manitoba with over 80 inches recorded in one area. Summer weather rolls up the prairies from the South very rapidly and bees were busy bringing in pollen and a little nectar from poplar and willow by mid-April. Rapid transition from cold to warm weather intensifies the rush to sow the grain, plant gardens, get out the bees, and generally keep pace with the new season.

Marketing: For the first time in eight years Canadian beekeepers have had a marketing problem. No export market has been available. Wartime industrial users have reverted to sugar. Too high a price in 1947 lost many customers and to accentuate the problem a bumper crop was extracted in 1948.

The law of supply and demand has functioned quite normally during the adjustment period following the war. Prices soared in 1947 when supply was short and slumped when supply exceeded demand. The executives of the Canadian Beekeepers' Council have been fighting hard to stop the price drop before it reaches disastrously low levels. Prices have steadied at a fairly reasonable level since the New Year. Safeway chain stores in Winnipeg are selling 2-pound containers for 38 cents.

The Canadian Beekeepers' Council has this year accomplished three things in an effort to steady the market and give greater stability to the industry: (1) A small but steady advertising program has been developed in conjunction with the Dominion Department of Agriculture. Increased sales have been evident since this campaign started, and the larger stores have voluntarily cooperated in listing honey quite regularly in their newspaper ads. (2) The Dominion Government is making a bulk purchase of up to 5 million pounds. Offerings are now being accepted for pasteurized honey in carlots packed in 60 or 70 pound containers. Price 14 cents basis No. 1 White in Montreal. Although not too acceptable to all beekeepers, the removal of this amount of honey should ease the price-depressing effect of surplus supply.

Probably the most significant recent development has been the working out of a compulsory levy system imposed on all metal and pa-

per containers by the container companies. The levy will amount to 1/5 cent per pound and will be turned over by the container companies to the Canadian Beekeepers' Council. Primary purpose of the fund is to advertise honey.

In addition to the Council's effort the Manitoba Beekeepers' Association ventured into the advertising field in an effort to increase consumption. There is considerable evidence that the number of colonies kept in this province will be considerably reduced next year. Package bee dealers in the province are handling about 50 to 60 percent of the numbers for the last few years. Adding to this the fact that sweet clover appears to be quite scarce we may find that the surplus supply will disappear in the near future.

General: Packages are arriving in particularly good shape. In spite of the concentrated cold in January and February, beekeepers who wintered reported good results. A few days ago I had a look at Nick Pankiw's overwintered colonies at Dufrost, Manitoba, and his 350 colonies came through the winter quite well Nick has a system of wintering which is a compromise between the cellar and outdoor method. He has what he calls his pavilion in which the bees are placed, and an entrance through the insulated wall is provided for each colony. Results are good. Mr. Pankiw also has an extensive honey plant garden and is very keen on the idea that beekeepers will have to do more and more to build up food sources for the bees for all times of the year.—E. C. Martin, Winnipeg, Manitoba.

NORTH DAKOTA, May 5

Weather: This has been a delayed spring, with rainfall up to the end of April the lightest in years. The local weather bureau station reported only .02 inch of rain for April which was the lowest for this month since 1926. However, during the past five days nearly two inches of rain has fallen which indicates that the deficiency has been remedied. The dry weather in April was a boon to the farmers in that it allowed seeding to proceed without interruption. Reports indicate that the rain is fairly general which means that clover and other honey plants will be put into excellent condition.

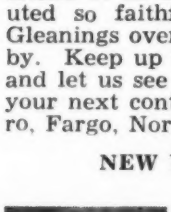
Honey Plants: Bees have been gathering from willow, maple, and elm during April, and more recently the wild fruit trees and dandelion have come into bloom. Recent examination of sweet clover fields in the Fargo area showed that the plants had come through the winter in excellent condition. The new growth now ranges up to about seven inches. Locally there is only a moderate amount of weevil injury to the foliage and so the prospects for a good supply of sweet clover bloom seem assured. It would appear, however, that the weevil situation is more serious in other places. Sweet clover in the southeastern part of the state is said to be badly damaged by the weevil. Unfortunately the beekeeper has little assurance that sweet clover fields will escape the plow long enough to be a source of nectar for his bees. Federal benefit payments have for years been paid to farmers to plow their sweet clover under as "green manure" before July 1. These payments are still in effect and amount to $1.50 per acre. Because of the common practice of plowing fields under before the blossoming period is any more than started, beekeepers should locate their yards insofar as possible near fields that are run only for seed production. Such fields remain uncut until late summer when the seed is ready for harvesting.

Condition of Bees: Wintering results were spotted. A commercial beekeeper who winters his bees outside recently told me that some of his yards had wintered with less than 10 percent loss while others showed losses ranging up to 50 percent of the colonies. All yards had been given the same amount of hive protection. The heavier loss occurred in yards located in densely wooded situations and he expressed the belief that these colonies had stored honeydew which had accounted for the bad wintering.

It is indeed a pleasure to note by the fine contribution from Ontario in the May issue that Allan T. Brown of Peterborough, Ontario, is following in the footsteps of our good old

friend J. L. Byer who has contributed so faithfully and so well to Gleanings over the many years gone by. Keep up the good work, Allan, and let us see a picture of you with your next contribution.—J. A. Munro, Fargo, North Dakota.

NEW YORK, May 7



Weather: A rather open winter which in most part was mild beyond all expectations was an important factor in the low winter losses in central New York State. An early spring started the fruit trees on their way to bloom and several heavy frosts have indicated that there might be some damage along this line. However, as this is being written, the amount of fruit bloom to be seen on travels throughout this area indicates that the bees will have plenty to work on. One beeman reported that on May 2nd the scale hive in his home yard gained 8 pounds that day on the fruit bloom flow.

Conditions: We up here are of the old school and believe in packing. Our winter losses will run around one percent and we attribute this to adequate packing. This also is a major issue when the queens begin brood rearing in early spring and hive warmth is essential. We find too that with proper protection of the colony during winter, honey is saved, which lessens the chances of having to feed syrup in the spring. Some beekeepers in this general location have been feeding their bees prior to the opening of the fruit bloom flow, but their reasons for such may be other than to prevent starvation.

Markets: It is my opinion that if beekeepers would pay more attention to packing and storage of their product in 5-gallon cans, it would be a direct reflection on their sales. If extracting is done too early before the honey has had a chance to ripen properly, a high water content is the result. It pays to use storage tanks and let the honey settle for at least 24 hours. The foam content of honey allowed to settle for that period is very much less and buyers and packers of honey do not like to see a lot of foam on top of every can, regardless of the quality of the honey. Storage of the honey is of vital importance. Rusty cans very often spoil sales. Five-gallon cans of honey should be stored in wood boxes or even in a cheap paper container, or so protected that the condensation of moisture on the outside of the cans will not cause rust.

No matter if the beekeeper keeps good stock—disease-resistant, young queens, and free from foulbrood—large crops are useless if he does not extract at the proper time and pride himself in grading and packing his product. We must all look out for the future of the honey business, and marketing is important. Even with the Government buying a large amount of honey, this can not begin to take up the slack and may only tend to make the beekeeper build up a sense of false security. —Roscoe F. Wixson, Dundee, New York.

VIRGINIA, May 9

Weather: The winter just passed was in many ways the mildest I can remember. Bees consumed lots of stores early in January. In many cases the queen began laying the first of January. Maples and other early sources of nectar and pollen began to bloom with the mild weather. February was like spring. Then the first of March the weather began to get cold. We had our coldest weather in March. This froze the bloom that was far advanced and chilled much of the brood. All of this unseasonable weather caused the bees to consume a large amount of stores which later on caused the colony strength to dwindle and bees to starve. Several beginners called me up, saying their bees had some kind of disease or were being poisoned as they were crawling out of the hive and dying. On examining the colony I found that the bees were starving. The more experienced beekeeper fed his bees to prevent this. Rain has been very abundant this spring and the prospects for a honey flow are normal. Here in Halifax County the tulip poplar flow is just beginning. As we had such a light flow

in 1948 we hope for a better one in 1949.

Honey Market: There is not much to report on the honey as most of it was sold before Christmas. There are two or three beekeepers who still have some honey on hand that they kept to supply their regular trade. It seems that they are getting the same price this spring that they got last fall. Honey is selling about as low as it can for beekeepers to stay in business. I believe, as Carl E. Killion said in the May issue of Gleanings, "The market is where it always was—we will have to go out and find it."

Miscellaneous: The Virginia State Beekeepers' Association held its spring meeting in Lynchburg on March 23. F. M. Dick of Brookneal was elected president; Henry W. Weatherford of Vernon Hill, secretary and treasurer.—H. W. Weatherford, Vernon Hill, Virginia.

ONTARIO, May 8

Weather: Reports from various sections of the province indicate that winter losses have been low, and bees are in good condition. April was cool, but a record heat wave in early May brought early sources of nectar and pollen into bloom before the normal date, and the bees took full advantage of it. During the first week of May I helped inspect a large commercial outfit some of which was being sold, and we found nothing that could be classed as a weak colony.

In spite of the lack of a protective covering of snow last winter, clover fields look remarkably good. The past few years the production of alsike seed staged a partial comeback, but the price of seed has slumped seriously the last few months and farmers are reluctant to seed extensively this spring with the market uncertain. Twenty-five years ago any bee yard was likely to have a hundred acres of sweet clover and alsike within flying range. The comparative absence of these crops today illustrates the change that has taken place in farm practice over the years.

Miscellaneous: The most important news item affecting Ontario producers—and those of the other provinces as well — was the announcement in late April that the Federal Government through the Prices Support Board, was prepared to put a floor price under honey, and would purchase five million pounds of the 1948 crop as a means of injecting stability and confidence into the honey market.

Terms of the purchase are that it must be packed in 60, 65 or 70 pound containers, that only carlots of a minimum of 30,000 pounds will be accepted, that it must be pasteurized, and that the price would be 14 cents per pound, basis white honey, delivered in Montreal, with adjustments downward for amber and dark classes. At this moment the writer has no knowledge as to its ultimate disposal, but the type of container suggests that it will be exported.

Personally, I am not convinced of the wisdom of the principle of floor prices and government purchase of agricultural commodities. One argument pro is that it maintains purchasing power of the producer group concerned, which is true, but it seems to me that producers of shoes, clothing, and electrical goods, or what have you, have the same claim when they find their warehouses overstocked. In the final analysis it is the taxpayers' money which foots the bill, and it tends to foster the attitude that when we find ourselves in difficulties all we need to do is to run to the government for help.

In the case of honey particularly it seems ridiculous that with our per-capita production less than four pounds, we have a large surplus, probably one-third of the crop.

The Dominion Bureau of Statistics compiles yearly records of honey production, prices, etc. At the O.B.A. convention criticism was expressed of the Bureau's methods of publishing its findings. It was suggested that instead of making public announcement that Canada had produced the biggest crop of honey on record in 1948 the Bureau had announced that the consuming public would have to get along on three and a half pounds each, there would have been a rush to buy honey.—Allan T. Brown, Peterborough, Ont.

Asked and Answered

Putting Shallow Super Under Brood Chamber

Question.—For some years I have been using quite successfully a shallow super of empty combs under my brood chambers. I am sure that in this locality this helps out a lot in the prevention of swarming. How generally is this plan used?—H. H. Dickson, South Carolina.

Answer.—A shallow super under the brood chamber is growing in popularity. Dr. C. C. Miller used what he called a slatted bottom, which he put under the brood frames. While this would cost less than a shallow super, it would not have the advantage, of course, of the still larger clustering space and ventilation afforded in the shallow supers. If the queen needs more room she can lay in the upper part of those shallow combs. No doubt this plan is one that deserves a little more prominence.

Bees Carrying Out Brood

Question.—I am a relatively new beekeeper in a small way. I notice that early in the morning there are some three or four dead larvae that had been pulled out of the combs and are lying on the alighting board. Other mornings I don't find any. I also notice that when the sun is up and is warm, the bees, of course, dispose of this dead brood. Upon examination, I find that there are about eight frames that are almost solid with brood in all stages and the shallow super is full of honey and in addition I am feeding them heavy syrup. I don't know whether this is a normal mortality or not.—John C. Estes, Virginia.

Answer. — It would appear that the dead brood which the bees have moved from the hive and deposited on the alighting board may be drone brood. At certain times of the year, especially during a dearth of nectar, or when a colony is very short on stores, bees will remove this brood. We note, however, that you have a shallow super full of honey and are feeding syrup, which would seem to indicate an abundance of stores present in the hive. When a colony starts removing worker brood, this is usually a sign of starvation. They remove the brood because they do not have food for the larvae.

Spacing Frames in Extracting Supers

Question.—I have 600 hives of bees. I produce extracted and bulk comb honey. The hives have one or two standard boxes and shallow supers over them. In the shallow supers we keep nine frames to make uncapping easier. It makes extra work to space the frames evenly. Wouldn't it be best if the ends of the frames were made wide enough to give that spacing? I don't like self-spacing tins as they do not allow the frames to be pushed sideways. I should like to hear what beekeepers think about it.—H. A. Franke, Texas.

Answer. — The matter of comb spacing is perhaps not too well understood. Obviously the 1⅜-inch spacing between the mid-ribs of combs in the brood chamber is correct. Some beekeepers say that 1½ inches between mid-ribs of combs is the correct spacing. When deep supers are used, it would be advisable to have the frames in the supers identical with the frames in the brood chamber so they could be interchanged easily when necessary. However, as you use shallow supers above standard hives there might be an advantage in having the end bars of the shallow frames a little wider so that nine shallow frames would occupy a super. This would save considerable time ordinarily used in spacing the frames by hand after a super is placed on the hive. There might be one objection to the wider end bars, namely, they might come in contact with a power uncapping knife in the process of uncapping combs. When frames with 1⅜-inch end bars are used and spaced nine to the super by hand, the cappings of the combs extend out farther than the widest part of the end bars and consequently the end bars do not then interfere with the uncapping.

Comb Foundation for Chunk Honey Production

Question.—For the production of chunk honey one must of necessity use shallow supers because suitable foundation for deep supers is not available. Is that correct? I read that one should use a light brood foundation not wired for the production of chunk honey. Will you give me directions for attaching the proper foundation for the production of chunk honey? —Margaret Bieghler, Pennsylvania.

Answer.—It is an advantage to use shallow extracting supers for the production of chunk honey. Thin super foundation should be used. If the supers are equipped with shallow frames taking thick top bars instead of shallow top bars, one can easily insert each full sheet of foundation into the groove of the top bar, then push the wedge up against the foundation, and tack the wedge down in order to hold it in place. After the filled comb is cut from this shallow frame the wedge is

removed and another full sheet of foundation is inserted. It is quite necessary to have the hive resting on level ground so that the full sheets of foundation will hang straight down in perpendicular fashion. When there is a honey flow on, the bees will quickly attach the sheets of foundation at the ends and bottoms of the frames, draw out the foundation, and fill it with honey, then cap it over. If regular shallow extracting frames with thin or ⅜-inch top bars with a groove in the tops instead of a wedge are purchased, it is necessary to use melted wax applied with a wax tube fastener to attach the foundation to the top bar. This is a lot of work so that is why we suggest that the thick top bar shallow frames be used.

Moving Bees a Short Distance

Question.—How can I move my bees from the yard adjoining an orchard to different spots in the orchard, a distance of 400 feet to one-fifth mile (for better pollination) with the least loss of bees?—Nelson Dewey, New York.

Answer.—It would seem impossible to move hives of bees a distance of one-fifth mile to different spots in an orchard without having some of the bees return to their original locations. This might be overcome to a certain extent by moving the bees in the evening, then placing some branches of trees or other objects over the entrances of the hives, in order that the bees may mark their new location when they fly out of their hive the next morning and thus be more likely to stay on the new location. Some of the old bees will probably return to the original location. However, if all of the hives were removed from the original location, leaving nothing that even looks like a hive, the bees that return to this location, not finding any hives to enter, may circle around a few times and then return to the new location.

Preparing Honey for Storage

Question.—What is the best way to keep honey for any length of time? I understand it turns to sugar if kept long. How does one avoid this.—Rev. S. M. Kato, Pa.

Answer.—Those who bottle honey for market make a practice of heating the honey to at least 160 degrees F., keeping it at that temperature for about 20 or 30 minutes in order to thoroughly liquefy it and to destroy any yeasts that might cause fermentation. If the honey is put into jars and sealed while hot it is not likely to granulate within a reasonable length of time. Honey that has crystallized in a 60-pound can may be heated by placing the can in a boiler of hot water, permitting the can to rest on a couple of sticks so that water may circulate underneath the can of honey. It is well to stir the honey occasionally while being heated. The boiler of water is of course put over a hot plate.

The Passing of Fred W. Muth

By E. R. Root

One by one the pioneers in beekeeping are passing on to the Great Beyond. The latest one was Fred W. Muth of Cincinnati, Ohio, whose death occurred May 7, 1949.

Mr. Muth was the grandson of Charles F. Muth, a still older pioneer in beekeeping. Charles Muth was the first to put up honey in one-half and one-pound glass jars. A. I. Root had preceded him in putting honey up in glass but he used the large size Mason jars. Charles Muth knew that the housewife would take the smaller size.

Fred W. Muth continued the honey bottling business, buying honey by the carload. His company was one of the first to introduce honey to the baking trade. His grandfather used to put out a honey cake which like all such products held moisture indefinitely. Fred's approach was to the bakers direct. He bought not only table honey but good quality strong-flavored honeys.

Mr. Muth was prominent in bee conventions, national and local. He never wrote long papers on the virtues of honey, but in short speeches stressed the importance of helping to create a market for the stronger-flavored honeys. He was the very soul of wit. As a toastmaster he was at his best. He was never afraid to tell the truth even though it might not please his listeners.

Mr. Muth leaves a son, Clifford, who is now carrying on the business of selling honey and bee supplies—a worthy successor to his father.

Just News

A meeting of the **North Jersey Beekeepers' Association** of New Jersey will be held on June 16 at the Woodcliff Lake apiary of Carl Cordes and Fred Conrad at 2 p.m. It is likely that Carlton Frederics, Nutritional Consultant of Radio Station WMGM will speak.

* * * * *

District meetings are being planned for Humboldt, Iowa, on July 22 and at Waterloo on July 23. These meetings are being fostered by the Federation-State Association. Local arrangements at Waterloo are in charge of a committee of the Black Hawk County Beekeepers' Association and in Humboldt County arrangements are in charge of Henry Hansen of Dakota City. The general programs will include exhibits, contests, and tours in the forenoon. A speaking program will take up the afternoon session. The topics to be selected will be those of immediate interest to beekeepers of the district. The speakers or discussion leaders will be those who have a real message for beekeepers. These meetings are sufficiently separated that anyone who is interested in attending a beekeeper's meeting may choose one or the other. Detailed programs will be available about July 1.—F. B. Paddock, Extension Apiarist.

* * * * *

Count Maurice Maeterlinck, 86, noted Belgian writer, died at his home near Nice, France, on May 6. He is best known to beekeepers for his book "The Life of the Bee" translated into English by Alfred Sutro and published by Dodd, Mead and Company, New York, in 1919. The chapter entitled "The Swarm" is a classic in the annals of beekeeping literature.

* * * * *

F. S. Houston of Tampa, Florida, prominent beekeeper, died on April 17 at the age of 50. He was president of the Tampa Bay Beekeepers' Association and only recently resigned as president of the Florida State Beekeepers' Association. He founded the Florida Beekeeper, a monthly magazine. He also received wide attention for his interest in the control of American foulbrood by feeding sulphathiazole. He will be greatly missed by Florida beekeepers and others who knew him.

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The New Zealand Beekeeper is to have a new editor, J. McFadzien of Outram, R.D., Dunedin, N. Z., who succeeds the retiring editor, W. J. Lennon.

* * * * *

The Westchester County Beekeepers' Association will hold its regular monthly meeting on Sunday, June 19, at 2:30 p.m., at the home of Mrs. Julia L. R. Chase, 12 Windle Park, Tarrytown, N. Y. After a short business meeting the Mutual Assistance Committee will give a practical demonstration of hive inspection. Beginners are urged to attend and bring along their bee problems. Refreshments will be served and visitors are always welcome.—B. F. Miller, Publicity.

* * * * *

USDA BUYS HONEY
(For May 19 A.M. Release)

The U. S. Department of Agriculture announced today that 11, 592,-600 pounds of domestically produced honey for the 1948 production were bought under the purchase program announced by the Department April 1, 1949. All the honey purchased will be used in School Lunch and institutional feeding programs. More than 18 million pounds were offered.

Prices paid to beekeepers and packers varied appreciably, depending upon whether the honey was White, Extra Light Amber, Light Amber, or Buckwheat in color, but averaged 14.266 cents per pound for processed and packed honey in 5-pound cans, f.o.b. shipping point. Average price per pound by varieties was White, 14.675 cents; Extra Light Amber, 14.319; Light Amber, 13.368; and Buckwheat, 11.4 cents. (Under the program, vendors other than beekeepers were required to certify that they had paid beekeepers not less than 8.5 cents per pound net for Buckwheat, 9.0 cents per pound net for Light Amber, 10.0 cents per pound net for Extra Light Amber, and 10.5 cents per pound net for White extracted honey.)

Area of purchase was largely in states west of the Mississippi River, with some purchased in eastern and

southern states. Largest purchases were made in California, Idaho, Ohio, and Utah.—U. S. Department of Agriculture, Production and Marketing Administration, Washington, D. C., May 18, 1949.

* * * * *

Extension Circular No. 334, a 30-page booklet entitled **Bee Lines**, by W. A. Stephen, Extension Beekeeper of North Carolina, State College of Agriculture, Raleigh, N. C., is now available. The booklet is intended primarily for beginners and contains information on getting started properly and caring for bees.

* * * * *

Louisiana State University and Agricultural and Mechanical College at Baton Rouge, Louisiana, will offer a **Short Course on Instrumental Insemination of Queen Bees,** beginning August 9, 1949.

Due to a continued demand for instruction in the technique of instrumental insemination of queen bees, this course is again being given by the Louisiana State University Extension Division with the cooperation of the U.S. Dept. of Agriculture, Bureau of Entomology and Plant Quarantine. The course will consist of lectures, demonstrations, and supervised practice in the insemination techniques as well as lectures on the use of the method in practical breeding. Only a very limited number of students can be instructed and it is requested that those having only a casual interest do not apply.

Time: The course will be given for five days, August 29 to September 2, 1949, inclusive.

Apparatus: The complete equipment, including insemination apparatus, microscope, and carbon dioxide equipment will be furnished, but the student may bring along any equipment he owns. For those who wish to purchase an insemination apparatus, it will be available at $65.00.

Prerequisites: Applicants should have a general knowledge of beekeeping methods but credit in formal courses is not required.

Credit: Not given for University credit.

Fees: Twenty-five dollars ($25.00) for each student, payable at time of registration. (Checks should be made payable to Louisiana State University.)

Registration: Requests for registration should be made as early as possible. Additional information and application forms may be secured from Dr. Otto Mackensen, Louisiana State University, Baton Rouge 3, Louisiana. Registration should be completed before August 1, 1949.

Selection of Students: Facilities for student instruction are so definitely limited due to the necessity for individual supervision that the right is reserved to reject applications. Those engaged in research work or who definitely intend to use the method in breeding or genetic studies will be given preference, if it is necessary to limit enrollment, over those who have a general interest in the method.

Instructors: Dr. Otto Mackensen and Mr. F. A. Robinson.

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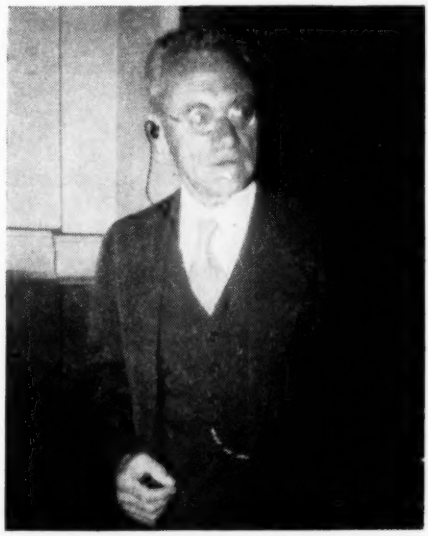

Dr. Karl von Frisch of the University of Graz as he appeared April 27 before a large audience in Columbus, Ohio. Those who may have been somewhat skeptical about his findings with reference to the language and behavior of honey bees were convinced that bees actually do communicate information about nectar sources by means of certain dances they perform after finding these sources. It would appear that bees have a sense of smell which is a greater controlling factor than color in locating nector and pollen.

Differentiating Characteristics in the Diagnosing of Brood Diseases

Characteristics to observe	American foulbrood	European foulbrood	Parafoulbrood	Sacbrood
General appearance of brood combs.	Brood irregular; intermingling of capped, open, and punctured cells; much dead brood in capped cells, cells with punctured cappings, and cells uncapped by the bees.	Brood irregular; dead brood mostly in open cells.	Brood irregular; most of dead larvae in open cells; varying amount of dead brood in sealed cells.	Brood slightly irregular; dead brood mostly in cells with punctured cappings or in uncapped cells.
Appearance of cappings over dead brood.	Many punctured, sunken, and discolored.	Few cappings sunken, punctured, or discolored.	Cappings over dead brood punctured, discolored, sunken, or thickened and sharply depressed in the center.	Usually punctured
Proportion of brood dead.	Varying from 1 or a few to 75 percent or more.	Varying from a few coiled larvae to most of the larvae in open cells; also a few larvae in capped cells.	Varying from a few larvae to practically all the brood.	Small amount of brood dead. in severe cases, 50 percent or more.
Age at time of death.	Late larval and early pupal stage; rarely coiled stage.	Coiled stage; occasionally late larval stage.	Coiled larval stage; occasionally late larval and early pupal stage.	Late larval stage; occasionally coiled larval or pupal stage.
Position of dead brood.	Fully extended on floor of cell; tail turned up on bottom; head lying flat; great regularity.	Coiled on bottom or twisted on side walls; few larvae fully extended on floor of cell; very irregular.	Coiled on bottom, twisted on sidewalls, or fully extended on the floor of the cell; great irregularity.	Fully extended on floor; heads prominently raised; great regularity.
Color of dead brood.	At first dull white, then light brown, later coffee brown, dark brown, or almost black.	At first dull white, grayish white, or yellowish white, often becoming brown, dark brown, or nearly black.	At first dull white or grayish white, becoming light brown, brown, reddish-brown, or dark brown.	Grayish to straw-colored, becoming brown, grayish-black, or black; head end usually darker.
Kind of brood affected.	Mostly worker; occasionally drone; rarely queen.	Worker, drone, and queen	Worker, drone, and queen	Usually only worker but sometimes drone.
Consistency of dead brood.	At first watery or slightly viscid, becoming ropy; finally brittle.	At first soft and watery, afterwards pasty; rarely viscid and ropy. scales tough, rubbery, or brittle.	At first soft and watery; in open cells becoming pasty and brittle; in capped cells frequently becoming ropy, finally tough, or leathery.	Skin fairly tough; contents watery and granular; scales tough, brittle when completely dry.
Scales	Uniformly extended on lower side wall; tail curved up; dead pupae with tongue extended upward, often attached to upper cell wall; difficult to remove from cells.	Usually coiled on bottom of cells; often irregularly twisted; sometimes fully extended; tracheae often clearly visible; tough and rubbery; easily removed from cells.	Coiled on bottom irregularly twisted on sidewalls, or fully extended in the cell; tracheae sometimes visible; easily removed from cells.	Uniformly extended on lower sidewall; head prominently raised; outline wavy; grayish-brown to nearly black; head darker; easily removed from cells
Odor	No odor at first; distinctive odor different from gluepot odor in early stage of decay; gluepot odor in brown ropy remains and scales; odors constant.	Usually no specific odor in dead, coiled larvae; sometimes sour odor in partly decayed remains; decayed meat odor often present in decaying brood in sealed cells, finally penetrating and acidlike; odors variable.	Variable, resembling odor in European foulbrood but much more intense in ropy remains.	Absent or slightly sour.

The above is taken from circular No. 392 issued July, 1936, entitled "Diagnosing Bee Diseases in the Apiary", by C. E. Burnside, Assistant Apiculturist, and A. P. Sturtevant, Associate Apiculturist, Division of Bee Culture, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C. This 35-page circular may be obtained from the Supt. of Documents, Washington, D. C., at 5c a copy

XUM

American Honey Institute News Notes

Commercial State Bank Building
Madison 3, Wisconsin

This is a sample of part of a newsletter sent to the members of the American Honey Institute:

HONEY SPECIALTIES FOR BAKERS is being revised and enlarged. Formulas for Honey breads, cakes, cookies, icings, and frostings that have been worked out by leaders in the baking industry are being added to the original collection.

Some of the latest formulas are from General Mills and Pillsbury Flour Mills.

You will be notified when the new books are available.

At the request of bakers, the American Honey Institute is preparing a window streamer to be used in windows where Honey-baked food is sold. When this colorful streamer is available you may secure it for your customers at the cost of printing.

* * * * *

Bakers can use strong-flavored Honeys in spicy cakes, cookies, and gingerbreads. A picture of a field of buckwheat with the caption "Honey from This Beautiful Buckwheat Flower" might be used on labels for containers of this Honey.

Buckwheat Honey is often preferred in cough syrup preparations and in making spicy cookies and gingerbread.

Baked goods in which strong-flavored Honey is used should not be sold in wrapped packages. An objectionable odor is produced especially in cellophane-wrapped packages.

It is very important when using Honey in bread to have a **uniform, reliable** source from which to obtain Honey. Green, fermenting, or objectionably-flavored Honey is **out.** Baking qualities vary somewhat according to floral source and care in handling the Honey.

"Catch as catch can" buying will sooner or later lead to trouble for both baker and producer.

It seems apparent that the very mild table Honeys do not possess enough flavor to carry through appreciably into a baked loaf of bread. A good moderately strong-flavored Honey of the blended type is most suitable in bread and lighter cakes. It is necessary to use about six percent (in a bread formula) of this type of Honey to get a detectable flavor and odor of Honey.

Regarding the proper blending of Honey for bakery goods, this will be determined by the types of Honey available in a particular locality. One large Honey packer furnishes to bakers a Honey containing 25 percent strong-flavored Honey and 75 percent mild Honey.

Of course it should in no way have an objectionable flavor and odor that would be carried into the finished product.

One baker wrote us the following:

"What we demand in Honey for bakery goods is a clear amber color, clean and sweet to taste. We buy from sources that we know are reliable.

"Before using each shipment of Honey, we put it through a few simple tests. We know that this is most important.

"1. Color is checked (must be clear amber color).

"2. Taste while cold (room temperature) is sweet and clean, must not have any after-taste or bite.

"3. The heat test is very important. We heat about a pound of Honey up to a fast boil. After coming to a boil and then cooling just a little, it must not have a scum or foam on top. We check the odor of this hot Honey. It must not have any odor of the beeswax or other undesirable odor. There seems to be a very bad reaction during fermentation with a Honey that has beeswax in it."

* * * * *

A year ago the Director of the American Honey Institute met with the chief of the School Lunch Program. The American Honey Institute was asked to enlarge its recipes that are to be used in this program to 50 and 100 portion size. The Institute was asked to furnish 50,000 printed copies for this program but the cost was more than could be met by the Institute at the time. However, the Institute has furnished recipes to many schools and it plans to offer more this year.

You will be pleased to know that

(Continued on page 401)

The above is taken from circular No. 392 issued July, 1936, entitled "Diagnosing Bee Diseases in the Apiary", by C. E. Burnside, Assistant Apiculturist, and A. P. Sturtevant, Associate Apiculturist, Division of Bee Culture, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, Washington, D. C. This 35-page circular may be obtained from the Supt. of Documents, Washington, D. C., at 5c a copy

XUM

A striking view of the Seattle Yacht Club and a portion of the University of Washington Campus. There are more pleasure boats registered in the Seattle-Tacoma area than any place in the United States with the exception of New York's famous Long Island Sound. Seattle Yacht Club is one of two yacht clubs in this area. The 583-acre University of Washington Campus has been described by travelers as one of the most beautiful in the world. In the upper right-hand portion of the picture is the University of Washington Pavilion and Stadium. The Stadium will hold more than 50,000, and the huge Pavilion has nightly basketball crowds during the season of 12,000 to 14,000.

—Photo courtesy Graphic Photo Company

1949 Pollination and Bee Pasturage Conference

This conference is being held by the Honey and Pollen Plants Committee of the American Beekeeping Federation, of which Glenn O. Jones of Atlantic, Iowa is Secretary-Treasurer.

Co-sponsored by the University of Washington, the State College of Washington, the Oregon State College, Utah State Agricultural College, the University of Idaho, the Montana State College, the Washington State Beekeepers' Association, the Oregon State Beekeepers' Association, and the Idaho State Honey Producers' Association.

The conference will be held in Guggenheim Hall on the University of Washington campus, where we will be the guests of the University for this meeting hall and the help of staff personnel. On the campus we are sponsored by the adult education Department, Lloyd Schram, Director, and by the Pharmacy Department, Forrest J. Goodrich, Dean. This conference will be international in scope since Canada will be included in the program. All interested Canadians are welcome and invited to attend and participate. In the schedule we are including Highway personnel, The Forest Service, Range Management Service, Wild Life Service, Agronomists, Soil Conservationists, Legume, Flower, and Vegetable Seed Growers, Horticulturists, Railway Agricultural Agents, Pharmacists, Beekeepers, Agricultural Extension Specialists, and all interested groups.

Besides transportation, housing, and meals there will be a $3.00 registration fee. The Pellett Birthday Dinner will be a separate charge for all who wish to attend.

The conference will run through July 12, 13, 14, and 15, 1949. This time allows fair and adequate consideration of all the subjects listed in the program. As early a registration as possible will help the committee in completing arrangements. Hotel reservations should be made early to avoid last-minute confusion. July is the height of the tourist season.

To accommodate any not included originally on the program, there are ample discussion periods.

For campus housing the University has graciously allotted 100

rooms in the Temporary Veterans' Dormitories for men only. All the essentials are there. Lavatory facilities are central. Linens, blankets, bedding, and towels will be provided. Rates are $1.00 per day per person, two to a room, double-decker bunks. If one to a room the rate is $1.50 per day. For these room reservations write J. A. Pringle, Director of Campus Housing, University of Washington, Seattle 5, Washington. Make your room reservation checks for Campus Housing payable to the University of Washington. Give time of arrival, length of stay, and write your name and address clearly.

For the Headquarters, Hotel Edmond Meany: 15 double beds, two persons, $5.50-$6.50; 15 twins, two persons, $6.50; 15 twins, two persons, $7.50. Reservations to be of record July 1st. State preferences of room type and rate, length of stay, and TIME of arrival in all cases. FOR RESERVATIONS, write A. Hough, Resident Manager, Hotel Edmond Meany, 45th and Brooklyn, Seattle 5, Washington.

For downtown hotel reservations write Edwin James, Chairman Reservations Committee, 4014 University Way, Seattle 5, Washington. Accommodations available are as follows: Olympic Hotel, 50 rooms, two persons, $6.00-$11.00; New Washington Hotel, 35 rooms, two persons, $6.00-$10.00; Gowman Hotel, 25 rooms, two persons, $6.00-$8.00; Benj. Franklin Hotel, 20 rooms, two persons, $6.00-$9.00; Mayflower Hotel, 35 rooms, two persons, $5.00-$8.00; Roosevelt Hotel, 25 rooms, two persons, $5.00-$8.00; Hungerford Hotel, 25 rooms, two persons, $5.00-$7.00; Vance Hotel, 15 rooms, two persons, $4.50-$6.50; Earl Hotel, 10 rooms, two persons, $5.00-$6.00.

Kindly state room type and rate, length of stay, and TIME of arrival. Make room reservation checks payable to Edwin James, Reservations Chairman.

Meals will be available cafeteria style during the conference at the University Commons, Raitt Hall on the campus.

If you wish reservation of discussion time, kindly state subject you wish to cover. For further information write Dr. A. M. Walrath, 1332 Med.-Dent. Bldg., Seattle 1, Washington.

The program will appear in the July issue.

A Honey Enthusiast

On page 320 of the May issue, reference was made to a talk by Miss Janie McDill, Extension Nutritionist at Winthrop College, Rock Hill, South Carolina, given at the meeting of the South Carolina State Association in Columbia on March 16. Miss McDill, as her portrait indicates, is alert, vivacious, talented. In fact, her advocacy of honey was so enthusiastic and spontaneous that afterward when asked if she were not herself a honey enthusiast, she replied, "Yes, I am crazy about honey myself." That explained the magnetic presentation, the forcefulness of her demonstrations. The honey situation today in the United States needs a hundred Janie McDills, a hundred Harriett Graces—nutritionists who are themselves completely sold on the subject. Ignorance of the real value of honey explains the under two-pound consumption. Publicity explains the nearly 100-times-greater consumption of granulated sugar.

Miss Janie McDill, Extension Nutritionist at Winthrop College, Rock Hill, S. C.

Buy and Sell Here

CLASSIFIED ADS

Only responsible advertisers and honest advertisements will be admitted to these columns. References required from new advertisers not known to us. Rate:—15c per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it), count as one word. Copy should be in by the 10th of the month preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. The Hubbard Apiaries, Manufacturers of Bee Supplies, Onsted, Michigan.

CLOVER HONEY, No. 1 white extracted, 16c lb. in 60's. Lose Brothers, 206 E. Jefferson, Louisville, Ky.

NEW CROP of honey shipped daily from producer in Florida. Pure orange blossom. 5 lb., $2.25. Pure Florida comb honey, 5 lb. pail, $2.75. No C.O.D. orders, all shipments prepaid. E. R. Raley, Daytona Beach, Box 1610, Florida.

FLORIDA WHITE TUPELO, the world's finest honey—pure orange blossom honey — white clover, and buckwheat honey shipped in barrels, 60-pound tins, gallon cans, or in glass by the case. Pure maple syrup. Alexander Company, 819 Reynolds Road, Toledo, Ohio.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE—We can not guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED — White and amber honey. Any amount. D. F. Treap, 316 Keenan Ave., Cuyahoga Falls, Ohio.

WANTED—Honey and wax, any quantity. Send samples and prices. Alexander Company, 819 Reynolds Road, Toledo 7, Ohio.

CASH FOR YOUR HONEY — Extracted or comb. Regular trade, send sample. 60-lb. cans furnished, if desired. W. R. Moomaw, Stone Creek, Ohio.

HONEY WANTED—All grades and varieties. Highest cash prices paid. Mail samples. State quantity. HAMILTON & COMPANY, 1360 Produce St., Los Angeles 21, California.

WANTED—EXTRACTED HONEY— Clover or light amber. C. H. Denny, 483 Moody St., Akron, Ohio.

HONEY AND WAX WANTED — Mail Sample. Advise quantity. BRYANT & SAWYER, 2425 Hunter St., Los Angeles 21, California.

WANTED—Honey of all types in any amount. Send sample and best delivery price. Get Root Supplies now in exchange for 1949 production. Buckeye Honey Co., 2930 N. High St., Columbus, Ohio.

COMB HONEY, clover. Bank references furnished. Please send sample, price to A. P. Knothe, Smithtown, N. Y.

FOR SALE

BEES, inspected, honey, and Root supplies. Any amount. Wm. March, R. D. 3, Mantua, Ohio, Route 303.

QUEENBEE PAINTING OUTFIT, $1.00; colony records, 10-15c postpaid. Southwick Apiaries, Waban, Mass.

WE CARRY a full line of ROOT QUALITY Bee Supplies. Prairie View Honey Co., 12303 12th St., Detroit 6, Mich.

FOR SALE — Write for large free Bee Supply Catalog. We manufacture bee hives, foundation, tanks, and extractors. Listing many items not found in other catalogs. Walter T. Kelley Co., Paducah, Ky.

WRITE FOR CATALOG — Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. The Hubbard Apiaries, Manufacturers of Beekeepers' Supplies, Onsted, Michigan.

The only comb foundation plant in the East. We sell foundation, work your wax, render comb and cappings. Twenty-nine years' experience. Robinson's Wax Works, R. D. 3, Auburn, N. Y.

SIMPLEX TRAP clips queens without handling, $1.00 postpaid. Instant Frame Spacers — eight-nine, specify size, $1.50 postpaid. Free circulars. George Leys, 36 Jackson St., New Rochelle, N. Y.

Brand new, never-used Superior Lifetime 8-frame extractor for sale at a discount. G. A. Pauli, Pueblo, Colorado.

10-frame hive bodies nice drawn combs, $5.00 each; metal covers, $1.00; bottoms, 75c; inner covers, 50c; excluders, 75c. Irvin VanDevier, Medina, Ohio.

YOUR WAX WORKED into quality medium brood foundation for 23c pound; 100 lbs., $19.00. Also medium brood foundation for sale at 75c pound. Fred Peterson, Alden, Iowa.

BEEKEEPERS! We have them, you need them! VOHO Entrance Closures. Completely screen a hive in 3 seconds yet insure ample ventilation. Uppers, .80. Lowers $1.30 plus postage. Cheaper in quantity. VOHO Smoker Snuffers, that little fire preventer. Complete smoker control for only 75c postpaid. Literature on request. Dealers invited. VOHO PRODUCTS, 2916 Orange St., Norfolk 13, Virginia.

ROOT 45 extractor, best offer. Ralph Oswald, Route 5, Tiffin, Ohio.

FOR SALE—Root 3-fr. extractor, good as new. Reasonable. Albert G. Hann, Glen Gardner, N. J.

FOR SALE—Slightly used 30-frame Root extractor, one two-frame hand extractor, 20 hive bodies, standard frames. Am incapacitated. Fred Wiemer, Denison, Iowa.

FOR SALE — Two-frame reversing extractor, $21.00; 15 hive bodies, metal cover, 10-frame, $40.00; 30 supers, $24.00; steam knife, copper boiler, $5.35; 10 excluders, $4.75. All bought 1945. Funk & Wagnalls unabridged dictionary, 1947 edition, $20.00. E. R. Buchanan, Nebo, Ky.

BEST OFFER TAKES about 40 ten-frame supers, 25 with drawn comb, rest have empty frames, some home made, ten shallow supers, two-frame reversible extractor, 40-gallon tank, at Fillmore, Illinois. Wm. Pirman, 2101 Gould St., Dallas, Texas.

BEES AND QUEENS FOR SALE

We use all possible care in accepting advertisements, but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

GOOD ITALIAN QUEENS, 75c each. D. W. HOWELL, Shellman, Georgia.

BOOKING package bees with Caucasian or Italian queens for spring delivery. Miller & Evans, Three Rivers, Texas.

CAUCASIAN QUEENS—1 to 9, $1.25; 10 to 49, $1.10; 50 and over, $1.00. Gentle high-producing bees. Howard E. Crom, Rt. 1, Box 75, Ripon, Calif.

BREWER'S LINE - BRED CAUCASIAN QUEENS — Prices. 1-99, $1.15; 100-up, $1.00. Member ABBA. Brewer Brothers Apiaries, 3616 Caucasian Circle, Tampa 6, Florida.

EARLY PACKAGE BEES. Prompt shipment begins May 10. Two-pound package and queen, $5.50 postpaid. Three-pound package and queen, $6.60 postpaid. Choice Italian queen, $1.50. Safe arrival guaranteed. Birdie M. Hartle, Reynoldsville, Pa.

GOLDEN — GOLDEN Italian bees and queens, finest of quality. 2 lb. with queen, $3.00; 3 lb. with queen, $4.00; 1 to 25 packages. Write for prices for larger orders. Select untested queens, 1 to 25, $1.00 each; 25 up, 90c each. Tested, $2.00 each. Breeders, $5.00 each. Carolina Bee Farm, W. O. Curtis, Mgr., Graham, N. Car.

FOR SALE—Approximately 300 colonies bees, one and two story, ten-frame, $6.00 per colony. Ernest Clifton, Feather Falls, Star Rt., Oroville, Calif.

BEES—50 two-story 10-frame, $10.00 each; 50 single-story, $8.00 each. Extracting supers with combs, $2.00 each. No disease. F. J. Smith, Castalia, Ohio, Rt. 1, Portland Road.

IN FLORIDA—600 1½-story colonies, $10.00 each; Cypress hives, combs in good condition, all young queens. With six frames of brood or more, and ready for production. No disease or junk, extra equipment below cost. Box 1610, Gleanings, Medina, Ohio.

Mott's strain of three-band Italians. Prices, 1 to 5 at 70c each; 6 to 10, 65c each; 11 to 50, 65c each. No disease. C. G. Ellison & Sons, Belton, S. C.

ITALIAN QUEENS—Quality, health, satisfaction guaranteed, $1.00. O. E. Brown, Route 1, Asheboro, North Carolina.

IMPROVED Italian Queens bred for honey production, 60c. Package bees, three pounds with queen, $3.50. Henry Loehr, Caldwell, Texas.

HONEY LABELS
Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

MICHIGAN HEADQUARTERS for
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Complete Line of Bee Supplies and Honey Containers
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Carloads and less than carloads. Mail sample and best prices in all grades.
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Mack's Queens

They Speak for Themselves

Big Hardy Northern Bred Italians — Queens that have made the name Mack synonymous in every important honey-producing section of the world. Our queen-rearing method assures us of Big Plump Vigorous queens that have the get-up-and-go and the stamina to stay with it. That's why we say

"They Speak for Themselves"

A Breeder since 1916. Price throughout the season, $1.00 each, postpaid.

Herman McConnell & Sons
Robinson Rte. 2 Illinois

HARDY NORTHERN QUEENS
Due to early build-up of our bees this spring we offer after May 15th a limited number of pure Italian package bees of the same northern quality we successfully shipped to Sweden and China.
3 lb. package with young queen, $4.75
Untested queens, $1.00; Tested, 2.00
Health certificate with each shipment
Quick Service — Satisfaction
BARGER APIARIES, Carey, Ohio

FOR SALE
Italian package bees and queens
Health certificate and live delivery guaranteed.
LYNN WILLIAMS
Rt. 3 Oroville, Calif.

THREE BANDED ITALIAN QUEENS
of a Select Quality
Produced in nucs with three standard size brood frames. Live delivery and pure mating guaranteed.
Untested, $1.00 each
FRED C. BROCK
McDonald, Tenn.
"35 Years with the Bees"

Package Bees and Queens
Bright Three-Banded Italians
None better. We guarantee safe arrival Packages with queens: 2 lb., $3.00; 3 lb. $4.00; 4 lb., $5.00; 5 lb., $6.00. Prices: Queens, prepaid, 90c each, any number. Packages F.O.B. Queens Prepaid
Taylor Apiaries
Box 249 Luverne, Ala.

NORTHERN BRED Italian queens, ready June 20th, $1.00 each. Shirl Baker, Rodney, Michigan.

REAL PETS—Brown's non-stinging, non-swarming bees. Good producers, Season's price, $2 a queen. Brown's Apiary, Cape May Court House, N. J.

CAUCASIAN QUEENS, 90 cents each. Epplings Apiary, "Idlewilde", Covington, Virginia.

YES, ALL COMPARISONS prove that Green's profit producing queens are the best to be had. They will please you from the brood nest to the harvesting of a great crop of honey. Backed by 22 years of breeding better queens. Price, 80c each. D. P. Green, Deland, Fla., Rt. 2.

CAUCASIAN bees and queens, 2 lb. and queen, $3.00; 3 lb. and queen, $4.00. Select queens, untested, 80c. Tested, $2.00. Black River Apiaries, Elliott Curtis, Mgr., Currie, N. C.

BRIGHT YELLOW golden Italian package bees and queens. They are real honey getters and gentle to work with. 2 lb. package with queen, $4.00; 3 lb. package with queen, $5.00; Untested queens, $1.25; Tested, $2.00. Guilford Apiaries, 4300A Burlington Rd., Greensboro, N. C.

CAUCASIAN—2-lb. pkgs., $3.00; 3-lb. $3.75. Queens, 75c. Lewis & Tillery Bee Co., Rt. 1, Box 280, Greenville, Ala.

FOR SALE: 20 colonies. Inspection certificate furnished. Equipment like new for 50. Complete honey house equipment. All or in part. Phone 400 or 54. Paul La Plant, Anoka, Minnesota.

FOR SALE—5 two-story colonies bees, extra equipment, and four-frame extractor, inspection certificate, $100.00. Charles Young, 381 New Milford Ave., Dumont, N. J.

TWO HUNDRED four-frame nucs, price, $5.00. W. E. Proctor, Palestine, Texas.

FOR SALE: Twenty colonies of bees in ten-frame hives, and 100 full-depth and some shallow supers. No disease. Rev. Chas. W. Erickson, Burnside, Iowa.

400 2-story 10-frame colonies, excellent condition. All super equipment needed to operate them for extracted honey. Can remain on location. Inspected. Box 293, Port Huron, Mich.

WANTED

WANTED—A used extractor, 12 to 20 frame. Must be reasonable. J. A. Jeffcoats, 3002 Hiway 49, No., Jackson, Miss.

HELP WANTED

WANTED: Man with some experience for balance of season. Board and room furnished. Write stating age, experience, wages expected, etc. Gartner Apiaries, Titonka, Iowa.

MISCELLANEOUS

WILL TRADE 220 colonies of bees with new crop and all the equipment with buildings for a farm. Certificate furnished. Steve Zupko, 4463 23rd, Wyandotte, Mich.

SEEDS

Study your conditions, plan for better BEE PASTURE. Free circular "SEEDS OF HONEY PLANTS". Pellett Gardens, Atlantic, Iowa.

SUPPLIES

ATTENTION BEEKEEPERS IN MINNESOTA and adjacent states. We offer a real service on Lewis-Dadant Supplies, honey containers, and labels at a price saving to you. Top market price paid for extracted honey and beeswax. HONEY SALES COMPANY, 1806-08 NO. WASHINGTON AVE., MINNEAPOLIS, MINNESOTA.

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THE BEEMASTER — Free Copy, introducing "Scientific Beekeeping". Earthmaster Publications, Dept. 5, Box 547, Sun Valley, Calif.

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WESTERN CANADA BEEKEEPER—Official organ of the Manitoba Beekeepers' Association. One year, $1.50; two years, $2.25; three years, $3.00. In combination with Gleanings in Bee Culture, $2.75. 211 Affleck Bldg., Winnipeg, Canada.

KNOW interesting facts concerning the bees of India through the INDIAN BEE JOURNAL, published in English, by the Bhupen Apiaries (Himalayas), Ramgarh, Dist. Naini Tal, U.P., India, or obtainable from them. Subs. Rs7/—or 10 shillings or 2.25 dollars per annum. Single copy Rs¼ s. 1/9 or 40 cents (International Money Order).

SOUTH AFRICAN BEE JOURNAL
Read the South African Bee Journal. Published every two months. Subscription 7/6 per year to the Treasurer, P. O. Box 3306, Cape Town, South Africa.

THE BEE WORLD—The leading journal of Great Britain and the only internationla bee review in existence. Specializes in the world's news in both science and practice of apiculture. Specimen copy post free 12 cents stamps. Membership in the Club including subscription to the paper, 10/6. The Apis Club, L. Illingsworth, The Way's End, Foxton, Royston, Herts, England.

ANGORA GOATS

INTERESTED IN Angora Goats? Read the Sheep and Goat Raiser, Hotel Cactus, San Angelo, Texas, the only ranch magazine published serving the Angora Goat Industry. Subscription — $1.50, Sample copy—fifteen cents.

Everything for the Beekeeper
Complete line of
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ITALIANS CAUCASIANS
RESISTANT-STOCK
Daughters of Queens bred for resistance.
We breed all three races in separate yards.
Booking orders now for 1949 shipping.
Over 30 years a shipper
Send for Free Circulars
Blue Bonnet Apiaries
Weslaco, Texas

ITALIANS
BEES AND QUEENS
2 lb. Package with Queen $3.75
3 lb. Package with Queen 4.75
Queens, each 1.10
When five or more packages are ordered we offer a discount from the above prices. We send you a health certificate, and guarantee live delivery.
A. M. PEACH Baldwyn, Miss.

Italian Bees and Queens
We can supply you with young bees and purely mated queens.
2 lb. package bees with queen, $2.75
3 lb. package bees with queen, 3.75
Queens (postpaid) ..... .60
Guaranteed full weight and prompt shipping dates. Health certificate with each shipment.
BAYOU BEE COMPANY
Rt. 1 Box 49 Montegut, La.

Three Banded Italian
BEES AND QUEENS
ALLEN APIARIES
Semmes, Ala.

Northern Bred
Leather Colored Italian Queens
75 cents each
Air Mail if distance justifies
No charge for clipping
DIEMER BEE CO.
Rt. 2, Box 7, Liberty, Mo.

HUMMER'S

Package Bees **Italian Queens**

Live Arrival — Prompt Shipment — Overweight Packages headed by young queens from proven high producing stock.
Satisfaction Guaranteed

	Queens	2 lb.	3 lb.	4 lb.	5 lb.
1 to 50	$1.20	$3.50	$4.50	$5.50	$6.50
Over 50	1.00	3.25	4.25	5.25	6.25

Queens airmail postpaid — no charge for clipping

Geo. A. Hummer & Sons

Established 1892 **Prairie Point, Miss.**
Wire or phone Macon, Miss.

Better Bred Queens 3-Banded Italians

Now is the time you need to watch your queens and be sure you have good ones in each hive. We can supply promptly any quantity from our Better Bred Stock at the following prices:

2 lb. package bees and queens $2.75
3 lb. package bees and queens 3.50
Queens ..... .65

Calvert Apiaries Calvert, Ala.

Three Banded Italian Package Bees and Queens

Very gentle and extra good honey getters. Prompt service. Highest quality.
Prices:
2 pounds with queen, $4.00 **Each additional pound, $1.00**
3 pounds with queen, 5.00
Untested queens: 1 to 25, $1.25; 25 to 50, $1.20; 50 up, $1.15.
Tested queens, $2.00

Bessemer Apiaries, 4300A Raleigh Rd., Greensboro, N. C.

Reliable Service - - -
Reliable Package Bees and Queens

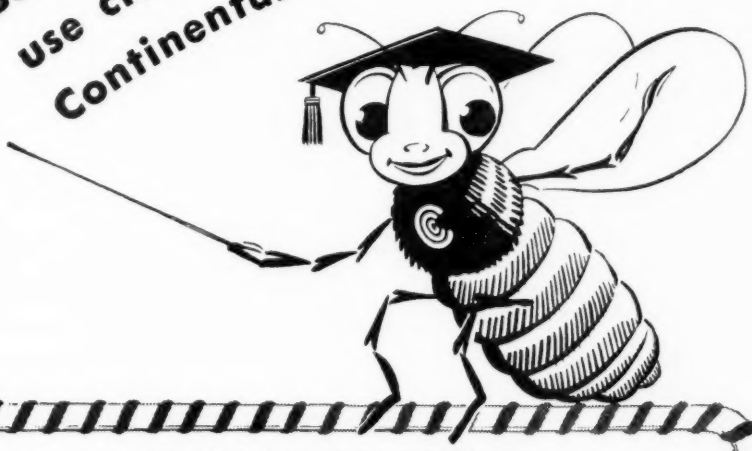
Three Banded Italian Bees and Queens
Queens Via Mail, Postage Prepaid
Package Bees Via Express F.O.B. My Shipping Point

	Queens	2 lb. pkg.	3 lb. pkg.	4 lb. pkg.
1-24	$.90	$3.70	$4.80	$5.90
25-99	.85	3.45	4.50	5.55
100 up	.75	3.20	4.20	5.20

All orders handled promptly.
Pure mating, safe arrival, and entire satisfaction guaranteed.

W. E. HARRELL **Hayneville, Ala.**

Bee smart—
use clean, bright, tight
Continental Honey Cans!



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Continental Can Company, Inc.

A Famous Strain of Light Colored Italians

produced and shipped by

The Most Modern Bee Breeding Establishment on Earth

Package bees available through July, Queen bees until fall.

One of the World's Leading Strains of Light Colored Italians

Lot	Queens	2 lb.	3 lb.	4 lb.	5 lb.
1-5	$1.55	$4.75	$6.00	$7.25	$8.50
5-15	1.50	4.65	5.90	7.15	8.40
15-25	1.40	4.50	5.75	7.00	8.25
25-100	1.35	4.40	5.65	6.90	8.15
100 up	1.20	4.25	5.50	6.75	8.00

Select Tested queens before June 1st—$10.00; after June 1st—$5.00, no discount

The Daniels Apiaries Picayune, Miss.

Summer Sale

First quality queens for remainder of the season at cost; also can supply package bees.

ITALIANS

First quality untested queens . . . . . $.50 any number
2-lb. Packages with queens . . . . . 2.50 any number
3-lb. Packages with queens . . . . . 3.00 any number
Tested queens . . . . . 1.00 any number

100 per cent satisfaction or money back

Merrill Bee Company Box 194 State Line, Miss.

BESSONET'S ITALIAN QUEENS

Our prices are the lowest in many years. Requeen those hives with old and failing queens NOW.

Prices: 1-24, 80c each; 25 or more, 75c each, Airmailed Postpaid.

We handle the famous LEWIS-DADANT SUPPLIES

Bessonet Bee Company Donaldsonville, La.

Yellow Italian Bees and Queens

We guarantee you live delivery, full-weight packages of young bees. Each package of bees will be headed by a young queen, and a health certificate with each order.

2 lbs., $3.00 ea.; 3 lbs., $4.00 ea.; 4 lbs., $5.00 ea., 5 lbs., $6.00 ea; Queens, 50c ea.

For queens shipped by Air Mail, add 6 cents to price of queen.

Oscar Arnouville Box 35 Hamburg, Louisiana

ITALIAN PACKAGE BEES and QUEENS

The season is at hand. Book your order now for our fine three-banded Italian Bees and Queens. Through years of selective and line breeding we developed a strain we believe equal to any for its productiveness, hardiness, and vitality. Health certificate, safe, reliable, dependable service, live arrival guaranteed.

2 lb. package with queen, $2.75 3 lb. package with queen, $3.50
4 lb. package with queen, 4.25 5 lb. package with queen, 5.00
Queens, 75c

B. J. BORDELON APIARIES Moreauville, La.

THE FRED W. MUTH COMPANY, Inc.

Bee Supply Manufacturers Honey Packers Beeswax
Pearl and Walnut Streets. Cincinnati 2. Ohio

May 16, 1949

It is with the deepest regret we mourn the loss of Fred W. Muth, President of the Fred W. Muth Company. He passed away May 7th after a long illness. It must be noted that with all his sickness he drove hard, and without fear of consequence, to continue his activity in business. Few younger men would have had the stamina to carry on as he had, at the age of 80.

His son, Clifford W. Muth, Sr., who for 37 years has been active in the business, succeeds his father as President and General Manager. Having been active in boy scout work for ten years, he has a fearless courage for saying and doing what he taught in scout work: "On my honor I will do my best to do my duty, etc." Having attended thousands of beekeepers' meetings, he knows the problems of beekeepers, and has helped solve many of them. His ingenious mind developed many ways and methods for modern beekeeping: the development to the Ultra Violet Ray Treated queen, wired Ironsides foundation, and the first filtering of beeswax and honey.

Clifford W. Muth, Jr., 1st Vice-President and Treasurer, has an outstanding war record, having been a pilot on a long-range bomber and was a student of high standing at the University of Cincinnati. He is in charge of operations. His study of artificial insemination of queens, the diseases of bees, etc., will continue to be of great benefit to beekeepers.

"Bud" Fisher, 2nd Vice-President, former county bee inspector and honey producer (on a large scale) is in charge of bee supplies and equipment manufacture.

W. Boring, for many years associated with The Fred W. Muth Company, is Secretary and is in charge of office management.

While the family of Muth has been in the bee business for 91 years, we thought you would like to know the people who will continue to serve you, not only as good, but better as opportunities present themselves.

To those, who for a generation or more have been customers and friends of the Muth Company, we pledge our devotion to fairness and understanding. To those who have yet to get acquainted with us, we say, "No task will be too difficult to undertake in order to please you."

Sincerely yours,

Clifford F. Muth, Pres.
Clifford F. Muth, Jr., V. Pres. & Treas.
E. L. Fisher, 2nd V. Pres.
W. Boring, Secy.

THE FRED W. MUTH CO.

Italian Packages and Queens

2-lb.	3-lb.	4-lb.	Queens
$3.00	$4.00	$5.00	65c

Guaranteed live delivery—clipped—airmail postpaid
Packages Express Collect

Sunkist Bee Company **Convent, La.**

QUEENS QUEENS QUEENS

Three Banded Italian bees and queens. The best of quality. We try our best to raise the best. All bees shipped in new cages, and health certificate with every order.
2-lb. package and queen, $3.00 each; 3-lb. and queen, $4.00 each. Select Untested queens, 1 to 25, $1.00 each; 25 to 50, 90c each; 50 up, 80c each. Tested, $2.00 each.

Alamance Bee Company **Graham, N. C.**
Geo. E. Curtis, Mgr. **Phone 6-7562**

CONGRATULATIONS

to the following winners of our DR queen contest
"I LIKE DR QUEENS BECAUSE . . ."
First Prize: 25 DR queens—M. M. Moore, 1801 Falls Ave., Waterloo, Ia.
Second Prize: 15 DR queens—Cass L. Timmons, Sr., Rt. 1, Bueshel, Ky.
Third Prize: 10 DR queens—Wayne Keller, Oshkosh, Nebraska.
The next five prizes of a one year's subscription to their favorite magazine were won by:
A. E. Gerlach, Summit Ave., New Ulm, Minn.
Frank C. Fuge, 1519-9th St., Oregon City, Ore.
Asberry Singleton, Gladstone, Manitoba, Canada
Leland Haslee, Highways 57 and 23, Plymouth, Wisc.
Carold W. Mains, 1411 Forest Ave., Red Oak, Iowa.

Iowa Beekeeper's Assn. State House Des Moines 19, Iowa

Whittle's
Leather Colored Italians

Get your Packages and Queens when you want them. Reserve 1949 Shipping Dates Early. Write For Our 1949 Prices On Package Bees and Queens Our Bees and Service Will Please You

G. E. Whittle
Star Route West
Greenville, Alabama

Queens! Queens!
Italians

75c each after May 15th
$7.00 per dozen

Every queen guaranteed and shipped Air Mail. They produce.

Walter D. Leverette Apiaries
P. O. 364
Ft. Pierce, Fla.

GETTING HONEY FROM "THE BEE"

(Continued from page 358)

ed the native above to lower him to the boat. This was anything but an easy undertaking, for the man could hardly make out his employer. All he could see of the Englishman was a brown, swirling mass.

Nevertheless, the job was carefully executed. The bold bee man swung out into space, bumping once or twice against the rock as he went down. He was unable to see a thing, being completely blinded by the bees, but he at last knew he was safe when he was clutched and drawn into the boat by the other native.

Brushing the bees from his veil, the Englishman saw through the driving mist of them another mass of swirling brown in the shape of a man. This was his second helper who was as completely covered as himself.

But now that the strange adventure had been brought to a successful conclusion, the men lost no time in leaving the spot. The boat was cut adrift, and taking the oars, the native rowed to a point below where the other native was picked up as soon as he came down from the back of the cliff.

Swiftly the party was then rowed to a place about five miles down the river where a sulphur smoke was made to free themselves of the last of their attackers. The suits had proved a perfect success; none of the trio had been stung, and they had brought back as a reward for their daring a considerable quantity of honey.

Queens

45c each

Any Number

By Return Mail

Bright 3-Band Italian bees and queens of highest quality. Purely mated. Full weight packages. Safe arrival and satisfaction. Health certificate furnished. Packages express collect.

Untested Queens	$.45
Tested Queens	.90
2 lb. pkg. with Queen	2.00
3 lb. pkg. with Queen	3.00
4 lb. pkg. with Queen	4.00

No Stamps Accepted

John A. Norman

Ramer, Ala. - - - - Route 2

Dixieland's

Leather-Colored Italians

Bees and Queens

	Queens	2-lb. pkgs.	3-lb. pkgs.
1-1000	$.65	$2.50	$3.50

Send in your order today. Shipping dates from May 1st through the season. You don't take chances when you buy Dixieland's Bees and Queens.

Dixieland Apiaries

Greenville, Alabama

Three Banded

ITALIAN BEES AND QUEENS

2 lbs. with queen, $3.50; 50 up, $3.35
3 lbs. with queen, 4.50; 50 up, 4.25
4 lbs. with queen, 5.50; 50 up, 5.00

Only 20% down to book your order, balance 15 days before shipping date. Health certificate and live delivery guaranteed with each shipment.

Address: CLOVER BEE FARMS
Hessmer, La.

YELLOW ITALIAN QUEENS

2 lbs. with queen, $3.00; 3 lbs. with queen, $3.80; 4 lbs. with queen, $4.60. Queens, untested, 50c p.p.; 60c air mail. Tested queens, each, $1.00. No checks. M. O. only.

Plauche Bee Farm
Hamburg, La.

Little & Moore Apiaries

Originally
LITTLE'S APIARIES
The John M. Davis Strain
GUARANTEED TO PLEASE
or money refunded
April 15th to June 1st:
1 to 10, $1.25 each
June 1st to November 1st:
$1.00 each any number
Write for quantity prices

Little & Moore Apiaries
Shelbyville, Tenn.

MOORE'S STRAIN

Away back in 1879 I commenced rearing Italian queens with the object of improvement constantly in view. By careful selection during all these years I have succeeded in producing a strain of three-banded leather colored Italian bees known as Moore's Strain of Italians which has won a world-wide reputation for honey gathering, hardiness, gentleness, etc.

Send for descriptive circular and read reports from those who have tried them. Untested queens, $1.00 each, any quantity.

J. P. Moore, Falmouth, Ky.

Route 3
Former Address: Morgan, Kentucky
Safe arrival and satisfaction guaranteed

FREE QUEENS

To Northern Honey Producers and Dealers

To those who have not tried my queens, I will airmail 2 or more sample queens free, upon receipt of your name and address. Your queens will be waiting for you.

Prices on queens .....75c each
10 or more .....65c each
Health certificate and live delivery guaranteed.

Carlus T. Harper
New Brockton, Alabama

ATTENTION

Three-Banded Italian Bees and Queens

Compare the price below with your honey prices and figure your gain. Even though prices have been cut to rock bottom you still get quality bees, full-weight packages, a health certificate, and live arrival guaranteed. Take advantage of this offer now.

2-lb. pkg. with queen, $2.50
3-lb. pkg. with queen, 3.50
4-lb. pkg. with queen, 4.50
Queens, each 50c
Queens in 100 lots 45c

Farris Homan
Shannon, Mississippi

ITALIAN QUEENS

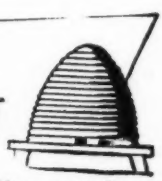
Bred for business, Gentle, 52 Years Breeding Experience, Safe Arrival. 1 Unt., $1.10 ea., 3 for $3.00. 1 Sel. Unt., $1.25 ea.

I. F. Miller, Warren, Pa., R. 3

STOLLER'S Fine Quality Clover Honey 1948 crop, excellent for bottling. Stoller Honey Farms, Latty, Ohio.

Honey

Healthful··Delicious ··Highly Nutritious



The new slogan of the American Beekeeping Federation, now in use throughout the industry, was written by Mrs. Glenn N. Crawford of Humboldt, Iowa, and won first place in the Federation Slogan Contest. Remember to use it in your own advertising. Newspaper mats of the slogan (one inch high by two columns wide) may be obtained from the office of the Secretary of the Federation, Atlantic, Iowa, for 25c and will save you advertising expense. Order one now!

Leather Italians Caucasians

Queens, Any Number, 50c each, Guaranteed.

2 lb.	3 lb.	4 lb.
$2.75	$3.50	$4.50

Prices reduced to meet the conditions within our industry and help you stay in business.

We will ship packages only until June 20th. Queen shipments until Nov. 1st.

The Rich Honey Farms **Jeanerette, La.**

Rich's All Italian Hybrid Disease Resistant Queens

A New Type Bee Northern Bred All Italian

This is a cross of pure Italian bees to produce a strong gentle bee that is superior in vigor and has positive resistance to American foulbrood. This stock is produced and maintained by northern honey producers at much expense. We help pay that cost.

Prices after May 20th:
1-24, $1.40; 24-99, $1.30
100-up, $1.15.

AMERICAN HONEY INSTITUTE

(Continued from page 387)

school lunch managers are writing, "Your recipes are wonderful; do send more."

Just today the following letter was received from a nurse in the Army Nurses' Corps: "I have received your recipes, tried them out, and they are wonderful. I plan to use your recipe books in the children's army hospital."

And today the manager of the State School Lunch Program asked the Director of the American Honey Institute to appear on a television program to show the two recipe books, OLD AND NEW FAVORITE HONEY RECIPES. These are liked very much by all who use them.

Someone wrote that he was disappointed that Honey wasn't used as a spread in this program. One of the first letters that came to the American Honey Institute said, "We have received a shipment of Honey for the School Lunch Program. How do I get this into the children's stomachs without the children and the rooms being plastered with it?"

Queens and Package Bees

GARON'S Better Quality Regular Three-Banded Italian Bees with Selected Queens.

Prices	1-24	25 & more
2 lb. packages	$3.00	$2.75
3 lb. packages	4.00	3.75
4 lb. packages	5.00	4.75
Queens	.75	.65

GARON'S 3-Way All-Italian "Hybrid Queens". Daughters of Disease-Resistant Stock.

Six generations of Controlled Instrumental Mating and Careful Research Work has gone into the production of the Northern-Bred All-Italian "Hybrids".

1 to 24, $1.40; 25 to 99, $1.30; 100 and up, $1.15.

Garon Bee Company

Tel 8614, Donaldsonville, La.

YORK'S

Package Bees and Queens
Quality Bred Italians

The Strain Preferred by Leading Honey Producers
Package bees with queens:

Quantity	1-24	25-99	100-up
2-lb.	$3.50	$3.25	$3.00
3-lb.	4.50	4.25	4.00
Queens	1.00	.85	.75

Queenless packages, deduct price of queen.

Enlarged facilities and increased production on high quality queens enable us to give you prompt service on any quantity. None better regardless of price.

York Bee Company
(The Universal Apiaries)
Jesup, Georgia, U.S.A.

Thrifty Queens

Three-banded Italians

100, $50.00
25 to 99, 60c each
1 to 25, 70c each

We can make immediate shipment.

REMEMBER—THRIFTY BEES are Guaranteed to please

W. J. Forehand & Sons
Fort Deposit, Ala.
Breeders Since 1892

Three-Band Italian Package Bees

Full weight. Prompt shipment. Young bees. State health certificate with each shipment. Live arrival guaranteed. Replacement or refund made promptly upon receipt of bad order from your express agent.

1949 PRICES

With Young Laying Queens

Lots of	2-lbs.	3-lbs.	4-lbs.	5-lbs.
1 to 29	$3.00	$3.75	$4.50	$5.25
30-Up	2.75	3.50	4.25	5.00

Untested Queens, $1.00 each

Tested Queens, $2.00 each

For Queenless Packages, deduct 75c each from above prices.

Jackson Apiaries

Funston, Georgia, U. S. A.

CAUCASIANS
CARNIOLANS

Both races gentle, prolific, best of workers. CAUCASIANS have the longest tongues of any race. CARNIOLANS often build up much more rapidly during unfavorable spring weather our northern states. Gentle bees save time, patience, sweat, and work. Over 25 years a queen breeder.

Prices: Untested queens, both races, $1.00 each. Tested, $1.75 each. Air Mail 5c extra per queen.

Albert G. Hann

Glen Gardner, New Jersey

Mountain Gray
Caucasian Queens for June

Order some of these queens now; their bees will be gentle and easy to handle. You will know the difference. Prices Post Paid.

1 to 24, $1.20; 25 to 99, $1.10
100 & up, $1.00.

Member ABBA

Bolling Bee Company

Bolling, Ala.

Your Decision Now

It is necessary if you are to get the most from your apiary operations this year.

You and you alone have to decide whether or not Package Bees will enter into your program in 1949.

We are at your service in supplying Bees and can give you values in Packages that are second to none in honey producing qualities.

Shipping begins March 15th weather permitting.

2 lb. package with young queen $4.00
3 lb. package with young queen 5.00

One frame brood where state permits, $1.00 extra.

Queenless bees, deduct per package, $1.25.
Some good dates still open

"They Produce"

Rossman & Long

P. O. Box 133 Moultrie, Ga.

QUEENS

One or One Thousand
Clipped or Not Clipped

Italians or Caucasians
Airmailed or Regular

If you need Queens or Package Bees of a proven honey gathering strain, reared by experienced men—GET STOVER'S

You Must Be Satisfied

Lots of	Queens	Packages with Queens 2 lb.	3 lb.	4 lb.	5 lb.
1-24	$.85	$3.25	$4.25	$5.25	$6.25
25-99	.75	3.00	3.95	4.90	5.85
100 up	.65	2.75	3.65	4.55	5.45

Tested Queens 75c Each Extra
For Queenless Package Deduct Price of Queen

The Stover Apiaries Mayhew, Miss.

QUEENS

By Return Mail, 50c

— Bright 3-Banded Italians —

2-lb. Pkg. with Queen, $2.50 ea.
3-lb. Pkg. with Queen, 3.50 ea.
Tested Queens ..... 1.00 ea.

Package bees F.O.B. Express.
If by parcel post add postage.

No "ifs" nor "ands", Quality bees and service is what counts. Our 29 years of experience assure you of the best money can buy. Full weight, safe arrival, state health certificate, and satisfaction guaranteed.

Norman Bros. Apiaries
Ramer, Alabama

HOLLOPETER'S QUEENS
By return mail. Hardy, hustling, honey-gathering strain of Italians which winter on summer stands with often 20-30 below zero. Good workers, easy to handle, and good to look at. Choice of light three-banded or extra light mated in separate yards. Untested queens, dollar each. Fifty years' experience back of each transaction and satisfaction guaranteed.
White Pine Bee Farms, Rockton, Pa.

Summer Prices

(after May 15, 1949)

Any quantity

2-lb. package Italian bees with queen $3.00
3-lb. package Italian bees with queen $4.00
Extra queens (Laying Italians) 75

For queenless packages subtract the price of the queen.

Packages are F.O.B. Tifton, queens alone are postpaid. Full Payment required prior to shipment.

Girardeau Apiaries

Phone 346 Tifton, Ga.

Member American Bee Breeders' Association

AT LAST!

A glove has been developed to enable you to handle bees in comfort, without the fear of unnecessary stings that can overtax your heart.

These gloves are very light, properly ventilated, and form-fitting to give you the "feel" desired.

A most important feature — the added synthetic skin-like surface of these gloves will not infuriate the bees.

Every pair carries a full guarantee.

Place you order now to insure prompt delivery.

Please specify size: Small, Medium, Large

PRICE: $3.75 plus 25c postal charges.

Write: Hargood Company

P. O. 814 **Passaic, New Jersey**

When ordering Italian bees and queens, remember TANQUARY'S quality, quantity, and service. We are here to serve and please you.

No. pkgs.	Queens	2-lb.	3-lb.	4-lb.	5-lb.
1-24	$.80	$3.50	$4.50	$5.50	$6.50
25-99	.70	3.25	4.25	5.25	6.20
100-up	.65	3.00	4.00	5.00	5.80

TESTED QUEENS, $2.00 each

Queenless Packages, deduct price of queen

Queens Postpaid — — —Packages F.O.B.

Western Union: Lena, S. C. **Phone: Estill, S. C., No. 109**

Tanquary Honey Farms, Inc. Lena, S. C.

Five Gallon Tanks

Made from heavy creamery tin, with ground valve faucet, inclined bottom for easy draining. Price $3.95 each delivered, money refunded if not satisfied.

M. Y. S. Company **Bainbridge, New York**

Electric Uncapping Knife

This knife heats in 15 seconds and operates with a steady heat regulated by an adjustable thermostat in the handle. No control boxes. New design in plastic handle. 110-115 v. AC only. 6 ft. rubber cord $15.00. Cotton cord $13.50 while they last.

Macy Electric Knife Company

1239 S. Lorena St. **Los Angeles 23, California**

Italian Bees and Young Queens

June Prices:

2-lb pkg. with queen, $2.40
3-lb. pkg. with queen, 3.00
Queens .50

Homan Bros.
Rt. 2 Shannon, Miss

Healthy Italian QUEENS

Health certificate with each shipment and live delivery guaranteed.

Queens, 75c

3-lb. pkg. with queen, $4.00

GEORGIA BEE & HONEY APIARIES
P.O. Box 312 Hortense, Ga.

Italian Queens

75 cents

Gold Leaf Apiaries
Jack Merwin, Hahira, Ga.

JENSEN'S

"Right Now Service" on Queens

The best weather, best floral conditions, best tested breeders, and our best efforts combine to produce the BEST QUEENS of the year NOW.

Your choice of two outstanding strains:

Our "Magnolia State" strain Italians with 30 years Selective Breeding, and popular acceptance.

From June 1st: 1-24, 85c each; 25 and up, 75c each. Airmailed and clipped free if desired.

NEW 3-Way "Hybrid" Disease Resistant Italian Queens with several generations of line breeding and instrumental insemination, then crossing of the best lines resulting in the "Hybrids". Every Breeder and Drone Mother has been tested for Disease Resistance. They are exceptionally vigorous and prolific, producing very populous colonies of great honey-gathering qualities. Treat yourself to some of these fine queens and learn what science is doing in the development of "BETTER BEES".

From June 1st, 1-24, $1.40; 25-99, $1.30; 100, up, $1.15 each. Airmailed, clipped, and marked free, if desired.

Jensen's Apiaries
Macon, Mississippi
"The business QUALITY built"

Canada's
National Monthly Magazine
for Beekeepers
Canadian Bee Journal
54 Bloor St. W., Toronto 5, Ont.
U. S. Subscription Price,
only $1.25 per year.

Do You Think the USDA is Unfair?

If you think that the U. S. Department of Agriculture has discriminated against the smaller beekeeper in its honey purchase programs . . .

If you think the USDA should be REQUIRED to support the price of your honey at 90% of parity, as proposed in the Morrison Bill . . .

BEES

Rush $2.00 today for an 18 MONTHS' SUBSCRIPTION to BEES (formerly Southern Beekeeper) (Regular price, $2.00 per year). ..Clip the cartoon from the first issue of BEES attacking USDA honey-buying policies and send to your Congressman . . . It will do more good than 1000 words!

Box 446 — Hapeville, Georgia

XUM

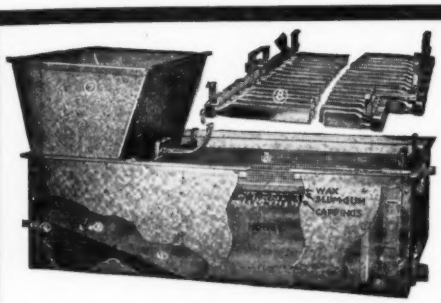
Do You Know?

Woodman Radials are built to stand up under any load — ask many users about this.

Extensive honey producers write in about loading as many as 100 combs, 2 at a time, into the 50-frame size. From 50 to 60 shallows can be crowded into the 30-frame—36 standard 9⅛" is common practice.

Consider the extra time involved in starting and stopping power-driven extractors taking less numbers. Spend this time uncapping the next load, with more whirling to get combs dry.

A. G. Woodman Co., Grand Rapids 4, Mich.



Do You Know the Brand Capping Melter

success is due to the Under The Melter GRID feeding? This pushes up and holds up the slumgum accumulation, which is scraped off the floor of unmelted cappings from time to time.

When Mr. Brand brought out the Melter, one of Michigan's most outstanding beekeepers insisted that we order one for him. This beeman often remarked later that, "if I could not get another I would not take $1000 for my Brand Melter."

When we came to see the Brand Melter at work, we decided to abandon the Woodman Top Feeding Melter, with 3" triangular cast aluminum melter grids. With any Top Feeding, the slumgum and stain is dragged down into the honey as it goes below.

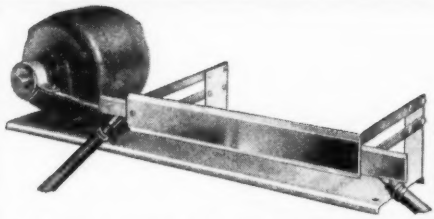
A. G. Woodman Co. **Grand Rapids 4, Michigan**

We buy Amber and White Clover extracted Honey. Send sample, state quantity and best price, freight paid to Cincinnati.

THE FRED. W. MUTH CO.

229 WALNUT STREET CINCINNATI 2, OHIO

OUR REFERENCE—YOUR BANK



The Brand Power Uncapping Knife

Has been in use some seasons giving excellent satisfaction. Steam heated with 1725 vibrations per minute, it is a very fast cutting knife. It runs almost without noise.

Comes complete with Motor mounted on the right unless ordered on the left. Mr. Brand advises that it can be sold on a money-back basis, if not pleased after reasonable tryout. Priced at $50.00 each F.O.B. El Paso, Texas or Grand Rapids, Michigan.

A. G. Woodman Co. **Grand Rapids 4, Michigan**

Announcing . . .

We have arranged to sell throughout the United States the famous line of Lewis Beeware and Dadant's foundation. Quantity discounts allowed. Write. Make up your order from Catalog and send direct to us. Catalog free. The best equipment at reasonable prices.

R. C. Daniels and Co. **Picayune, Miss.**

(An independent and separate service of The Daniels Apiaries)

Wax Melter with V-ridge Construction

Save all of the honey of your cappings - Melts at low temperature as fast as uncapped. Welded construction stainless steel, aluminum, or galvanized.

A. H. Schmidt **White Bear Lake, Minn.**

Manufacturer of Metal Bee Hives

Glass and Tin Containers

5	lb. glass jars, carton of	6	$.52
3	lb. glass jars, carton of	12	.60
2	lb. glass jars, carton of	12	.56
1½	lb. glass jars, carton of	12	.54
1	lb. glass jars, carton of	24	.86
8	oz. glass jars, carton of	24	.80

All Hazel-Atlas glass with white caps. Order 25 cartons, 2c per carton less; 100 cartons, 4c less. 5 lb. Continental F. top pails with handles, carton of 50, $4.90; 10 cartons, each, $4.48. Carton 16 60-lb. cans, $7.84. Write for our complete list of paper shipping supplies. We ship sudden.

Roscoe F. Wixson
Dundee, N. Y.

RAISE HAMSTERS

The new wonder animals from Syria. Often called Toy Bears. Delightful pets. Everyone wants them. Laboratories need thousands. Clean, odorless. Raise anywhere. Profitable and interesting. Send name and address for big, free picture book.

GULF HAMSTERY
1612 Basil St., Mobile, Ala.

Prepare for the Future
Buy U. S. Savings Bonds

Australasian Beekeeping News
The Leading Bee Journal of the Souther Hemisphere is the

"AUSTRALASIAN BEEKEEPER"

Subscription 8 shillings per year. Start any time. Inquire for International Money Order for 8 shillings (Australian) at your Post Office.

Write now to the Editor
P. O. Box 20, West Maitland
New South Wales, Australia

INDIANA BEEKEEPERS

We are now accepting orders for very fine Italian bees and queens. Get our prices.

Bee Supplies—Compare our quality and prices with other supplies before buying. Write for catalog.

A. I. ROOT CO. of INDIANAPOLIS
121 No. Alabama St,
Indianapolis 4, Indiana